City of Capitola
City Council Meeting Agenda
Thursday, September 28, 2023 – 6:00 PM

City Council Chambers
420 Capitola Avenue, Capitola, CA 95010

Mayor: Margaux Keiser
Vice Mayor: Kristen Brown
Council Members: Yvette Brooks, Joe Clarke, Alexander Pedersen

Regular Meeting of the Capitola City Council – 6 PM

All correspondences received prior to 5:00 p.m. on the Wednesday preceding a Council Meeting will be distributed to Councilmembers to review prior to the meeting. Information submitted after 5 p.m. on that Wednesday may not have time to reach Councilmembers, nor be read by them prior to consideration of an item.

1. Roll Call and Pledge of Allegiance

Council Members Yvette Brooks, Joe Clarke, Alexander Pedersen, Kristen Brown, and Mayor Margaux Keiser.

2. Additions and Deletions to the Agenda

3. Presentations

Presentations are limited to eight minutes.

A. Mayor's Proclamation - George Wightman

B. Presentation of Junior Guard Participant Recognition Awards

C. Presentation from Visit Santa Cruz County

D. Grant Report from the National Alliance on Mental Illness, Santa Cruz County

4. Report on Closed Session

5. Additional Materials

Additional information submitted to the City after distribution of the agenda packet.

6. Oral Communications by Members of the Public

Please review the Notice of Remote Access for instructions. Oral Communications allows time for members of the Public to address the City Council on any "Consent Item" on tonight's agenda, or on any topic within the jurisdiction of the City that is not on the "General Government/Public Hearings" section of the Agenda. Members of the public may speak for up to three minutes, unless otherwise specified by the Mayor. Individuals may not speak more than once during Oral Communications. All speakers must address the entire legislative body and will not be permitted to engage in dialogue. ***A maximum of 30 minutes*** *is set aside for Oral Communications.*

7. Staff / City Council Comments

Comments are limited to three minutes.

8. Consent Items

All items listed as "Consent Items" will be enacted by one motion in the form listed below. There will be no separate discussion on these items prior to the time the Council votes on the action unless members of the City Council request specific items to be discussed for separate review. Items pulled for separate discussion will be considered following General Government. Note that all Ordinances which appear on the public agenda shall be determined to have been read by title and further reading waived.

A. City Council Meeting Minutes
Recommended Action: Approve minutes from the regular meeting on September 14, 2023.

B. Purchasing and Procurement Policy and Ordinance
Recommended Action: Adopt an ordinance amending Chapter 3.16 of the Capitola Municipal Code pertaining to Purchasing and Purchasing Contracts; and adopt revised Administrative Policy III-4: Purchasing and Procurement Policy.

C. Completion of the Kennedy Drive Sidewalk Project
Recommended Action: 1) Accept as complete the Kennedy Drive Sidewalk Project as constructed by Diamond D Concrete; 2) authorize the City Clerk to file and record a Notice of Completion; and 3) authorize the release of the contract retention of $8,560 as prescribed in the contract.

D. Noble Gulch Culvert Condition Assessment
Recommended Action: Authorize the City Manager to execute an agreement with V&A Consulting Engineers, Inc. for the Noble Gulch Culvert Condition Assessment in the amount of $29,950.

9. General Government / Public Hearings

All items listed in "General Government / Public Hearings" are intended to provide an opportunity for public discussion of each item listed. The following procedure pertains to each General Government item: 1) Staff explanation; 2) Council questions; 3) Public comment; 4) Council deliberation; 5) Decision.

A. Universally Accessible Playground at Jade Street Park Naming
Recommended Action: Select a playground name for the Universally Accessible Playground at Jade Street Park.

B. Bay Avenue and Hill Street Traffic Safety
Recommended Action: Provide direction to staff regarding short-term and long-term options for improving traffic safety at the intersection of Bay Avenue and Hill Street.

C. City Council Appointments to City Advisory Bodies
Recommended Action: Appoint members of the public to the City of Capitola Commission on the Environment.

10. Adjournment

Notice of In-Person & Remote Access

Meetings are open to the public for in-person attendance at the Capitola City Council Chambers located at 420 Capitola Avenue, Capitola, California, 95010

Other ways to Watch:

Spectrum Cable Television channel 8

City of Capitola, California YouTube Channel

To Join Zoom Application or Call in to Zoom:

Meeting
link: https://us02web.zoom.us/j/83328173113?pwd=aVRwcWN3RU03Zzc2dkNpQzRWVXAydz09

Or dial one of these phone numbers: **1 (669) 900 6833, 1 (408) 638 0968, 1 (346) 248 7799**

Meeting ID: **833 2817 3113**

Meeting Passcode: **678550**

To make a remote public comment:

Via Zoom Application: Use participant option to "raise hand". The moderator will unmute you

Via Zoom phone call: Dial ***9** on your phone to "raise your hand". The moderator will unmute you

Notice regarding City Council: The City Council meets on the 2nd and 4th Thursday of each month at 6:00 p.m. in the City Hall Council Chambers located at 420 Capitola Avenue, Capitola.

Agenda and Agenda Packet Materials: The City Council Agenda and the complete Agenda Packet are available for review on the City's website: www.cityofcapitola.org and at Capitola City Hall prior to the meeting. Agendas are also available at the Capitola Post Office located at 826 Bay Avenue Capitola. Need more information? Contact the City Clerk's office at 831-475-7300.

Agenda Materials Distributed after Distribution of the Agenda Packet: Pursuant to Government Code §54957.5, materials related to an agenda item submitted after distribution of the agenda packet are available for public inspection at the Reception Office at City Hall, 420 Capitola Avenue, Capitola, California, during normal business hours.

Americans with Disabilities Act: Disability-related aids or services are available to enable persons with a disability to participate in this meeting consistent with the Federal Americans with Disabilities Act of 1990. Assisted listening devices are available for individuals with hearing impairments at the meeting in the City Council Chambers. Should you require special accommodations to participate in the meeting due to a disability, please contact the City Clerk's office at least 24 hours in advance of the meeting at 831-475-7300. In an effort to accommodate individuals with environmental sensitivities, attendees are requested to refrain from wearing perfumes and other scented products.

Televised Meetings: City Council meetings are cablecast "Live" on Charter Communications Cable TV Channel 8 and are recorded to be rebroadcasted at 8:00 a.m. on the Wednesday following the meetings and at 1:00 p.m. on Saturday following the first rebroadcast on Community Television of Santa Cruz County (Charter Channel 71 and Comcast Channel 25). Meetings are streamed "Live" on the City's website at www.cityofcapitola.org by clicking on the Home Page link "**Meeting Agendas/Videos.**" Archived meetings can be viewed from the website at any time.

Capitola Junior Lifeguard Appreciation

2023

Participants

- Impacted 1,022 children ranging from 6 -18 years old
- Personal Development
- Physical Training
- Competition
- Ocean Safety
- Emergency preparation

Session 1 Division Awards

Morning Little Guards
Best All Around Logan
Team Captain Genevieve
Best Sport Vera
Most Improved Ellis

6s PM
Best All Around Josie Hoffman
Best Sport Brady Hamilton
Team Captain Kanalu Miller
Most Improved Luca Mecozzi

7s Pm
Most Improved Theodore Lee
Best All-Around April Grant
Team Captain Wyatt Rogers
Best Sport Hunter Piro

8 year olds
Most Improved Lucy Darton
Best All-Around Luke Stumpf
Team Captain Mcoy Hollis
Best Sport Reagan Christenson

Cs pm
Best Sport Alexis Amsden
Best All-Around Hudson Fry
Team Captain Johnny Mayo
Most Improved Ayden Comment

Cs am
Most Improved Greyson Oates
Best all around Zander Brown
Team Captain Calvin Davis
Best Sport Ali Boles

Bs Awards
Most Improved Charlotte Sanchez
Best All Around Keira Burke
Team Captain Jack Davis
Best Sport Martin Cruz

As
Most Improved Hugo Baring
Best All Around Kate Brandon
Best Sport Cassidy Perry
Team Captain Rocco Giorgianni

Session 2 Division Awards

6's - AM
Most Improved: Reagan Butka
Best Sport: Charlie Bonifacio
Team Captain: Nolan Morse
Best All Around: Maizy Jacoby

7's - AM
Most Improved: Cici Robertson
Best Sport: Boaz Reynolds
Team Captain: Malloy Graves
Best All Around: Nadia Flandberg

8's - AM
Most Improved: Luka Joedicke
Best Sport: Bonnie Bonifacio
Team Captain: Stevie Warren
Best All Around: Kaiea Miller

6's - PM
Most Improved: Maya Vaughn
Best Sport: Shane Clet
Team Captain: Max Lewin
Best All Around: Sol Heier

7's - PM
Most Improved: Jack Lamoureux
Best Sport: Ellie Geriguis
Team Captain: Mia Kokot
Best All Around: Frankie Schwirck

8's - PM
Most Improved: Carmen Orona
Best Sport: Sonny Gammino
Team Captain: Cody Brookman
Best All Around: Adriana Cardoso

C's - AM
Most Improved: Landon Alibrandi
Best Sport: Tessa Yao
Team Captain: Leila Beckett
Best All Around: Emmylou Hanson

C's - PM
Most Improved: Xavier Burkett
Best Sport: Maya Gammino
Team Captain: Hugh Olson
Best All Around: Vivian Chemontowski

C's - PM
Most Improved: Xavier Burkett
Best Sport: Maya Gammino
Team Captain: Hugh Olson
Best All Around: Vivian Chemontowski

B's
Most Improved: Reghan Ditty
Best Sport: Ocean Cervine
Team Captain: Eden Findrick
Best All Around: Liam McLaughlin

A's
Most Improved: Cyrus Candia
Best Sport: Jack Smith
Team Captain: Summer Shields
Best All Around: Mia Barton

AA's
Most Improved: Bradley Schwarz
Team Captain: Averie Young
Best All Around: Chloe McGilvray

Beach Wide Awards

- **Session 1 Ironwoman:** Marria Talavera
- **Session 2 Ironman:** Zander Brown
- **Dorrie Award:** Bradley Schwarz

SANTA CRUZ COUNTY CALIFORNIA

CAPITOLA UPDATE

Terence Concannon CATP

A NEW CEO

Over 24 years of experience in hospitality and tourism

Most recently President & CEO for Go Lake Havasu

Branded and independent hotels

Operations, sales & marketing, community engagement

Dedicated to Equity, Diversity and Inclusion

Tourism Geek

A FRESH OUTLOOK

ENGAGEMENT WITH

Elected officials, county & city leadership

Stakeholder businesses & strategic partners

County and city chambers of commerce

COMMITMENT TO

All cities, communities and unincorporated areas

Attracting visitors: domestic & international

Improving the quality of life for all residents

A RENEWED COMMITMENT TO CAPITOLA

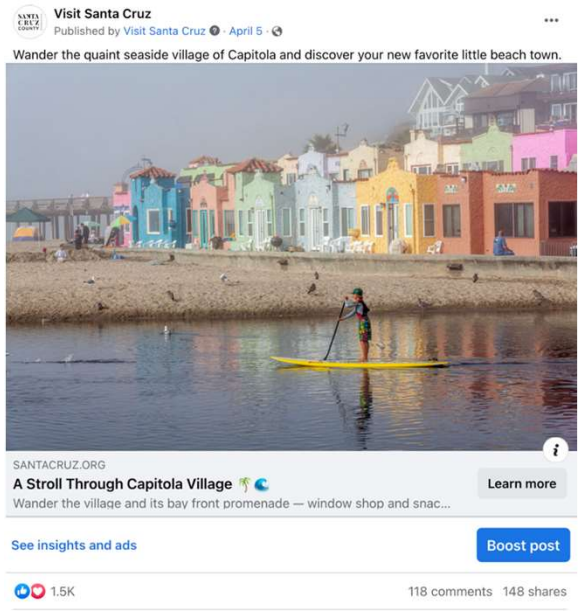
Work with chamber to educate and promote

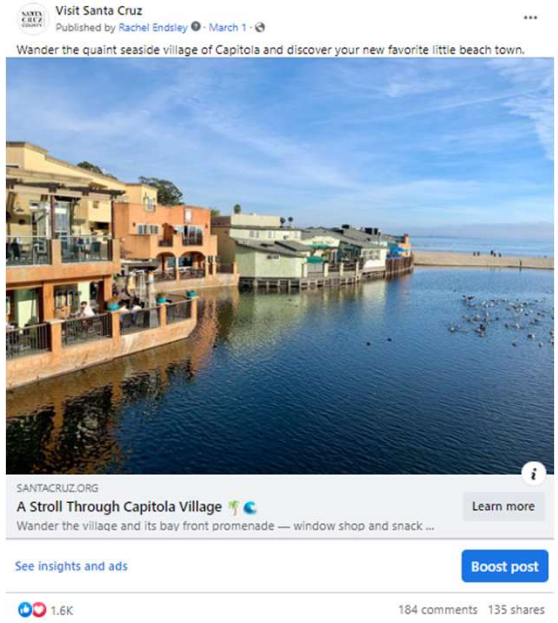
Celebrate the assets of Capitola

Regular updates to City Council

Engagement with the community, stakeholders & the Capitola & Wharf BIA

RECENT CONTENT : SOCIAL MEDIA



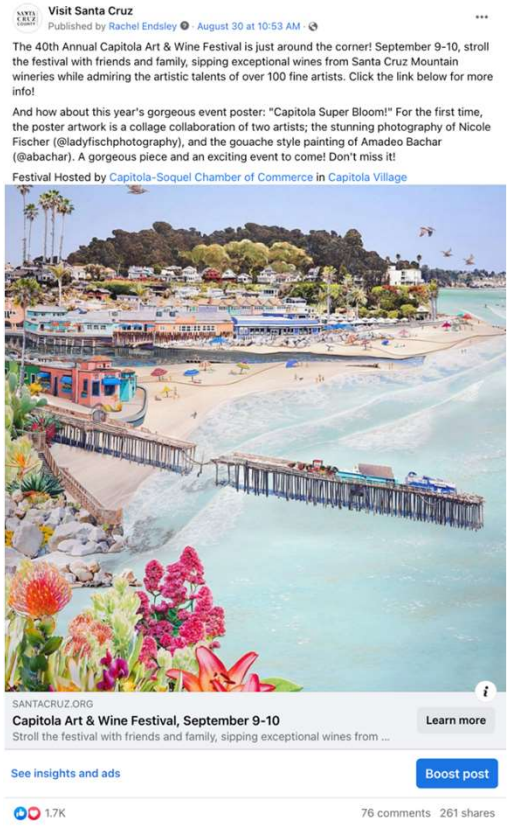


A Stroll Through Capitola Village

This ad was shared in two versions (A/B) and received:

- Over 4,069 link clicks
- 3,000 likes
- 302 comments
- 283 shares
- and reached over 183k accounts.

RECENT CONTENT : SOCIAL MEDIA

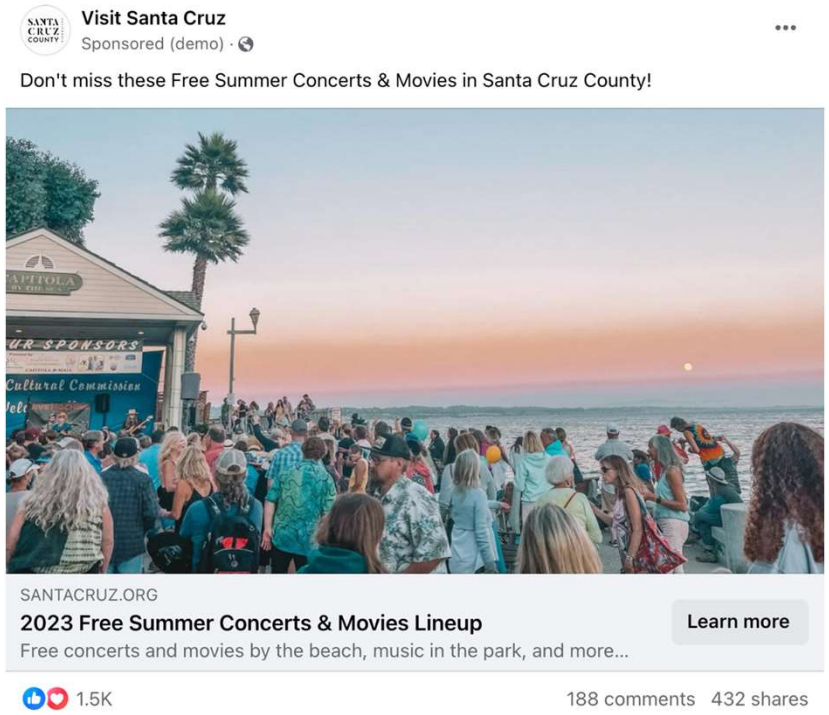


Facebook Ad & Post: Capitola Art & Wine Festival

Shared this event a week prior to the event date, this post received

- over 2,753 link clicks and
- sparked 76 comments
- and 261 shares.

RECENT CONTENT : SOCIAL MEDIA

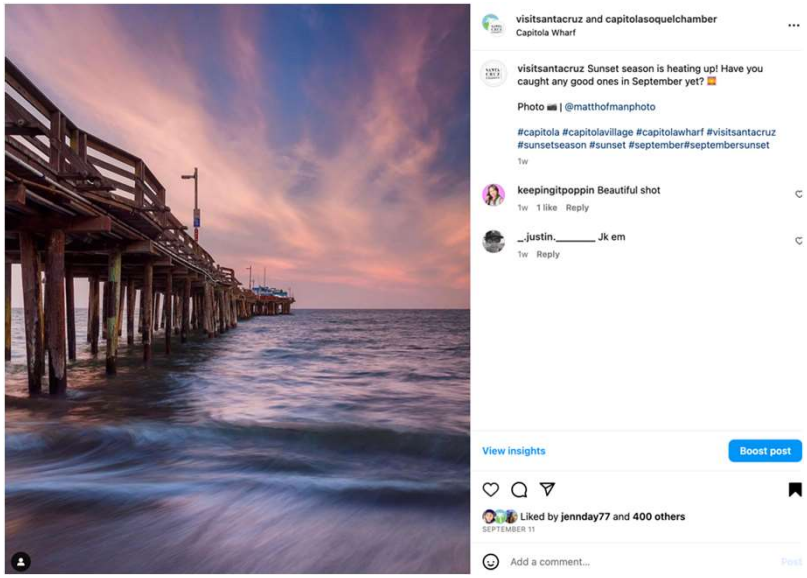


Facebook Ad & Post: 2023 Free Summer Concerts & Movies

Capitola's Twilight Concerts led the way for the Free Summer Concerts & Movies Facebook and Instagram ads, posts, reels and stories for Summer 2023.

Here is one of the many ads/posts that shared Capitola's Twilight Concerts, Sunday Art & Music at the Beach, Movies at the Beach, and many other free summer movies and music around Santa Cruz County.

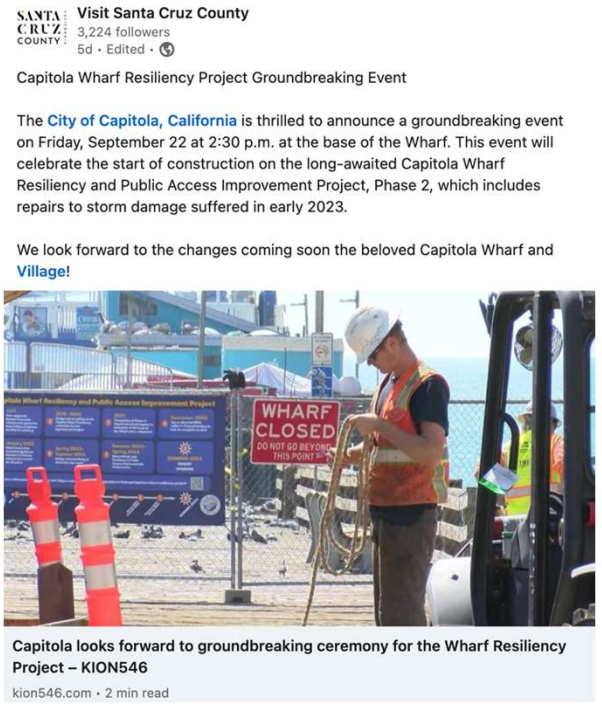
RECENT CONTENT : SOCIAL MEDIA



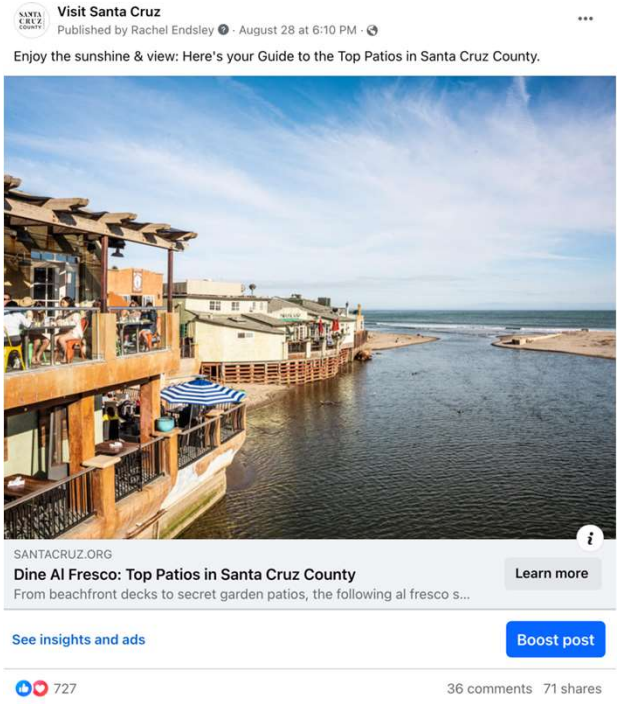
Wharf Love

We have shared many posts in the last few months featuring the Capitola Wharf.

Both scenic photos, and information on the Capitola Wharf Resiliency and Public Access Improvement Project



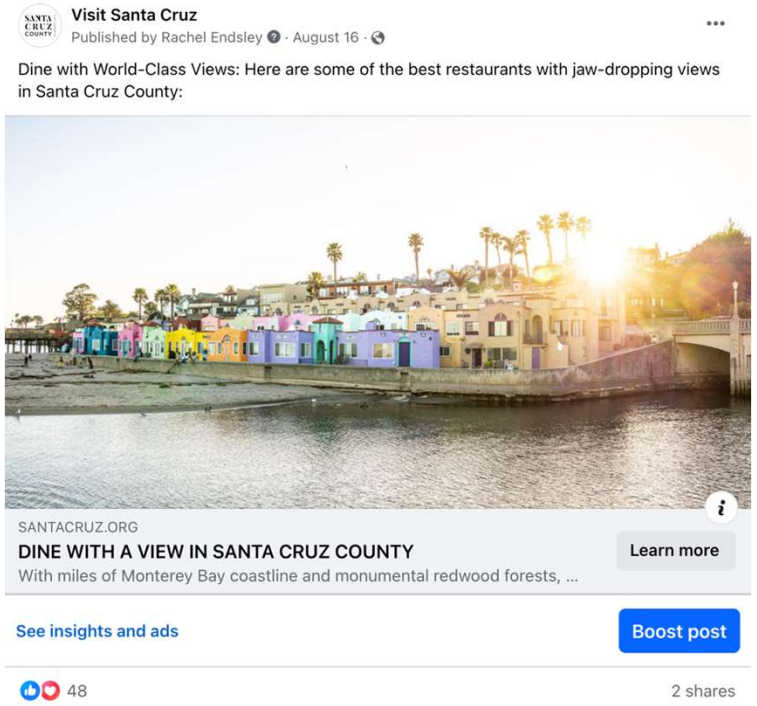
RECENT CONTENT : SOCIAL MEDIA



Facebook Ads & Social Posts with Capitola as the Hero Image

Dine Al Fresco: Top Patios in Santa Cruz County is one of our most popular blogs. The piece mentions Zelda's, Paradise Beach Grille, Margaritaville, Capitola Bar and Grill Gayle's Bakery, and Shadowbrook.

Another Capitola Village hero shot is often used for Dining with World-Class Views which features several Capitola Village restaurants, including Shadowbrook.



RECENT CONTENT : VSCC BLOG

Several blog stories, including:

Dining with World-Class Views
2023 Free Summer Movies & Concerts
Dine Al Fresco: Top 20+ Patios in Santa Cruz County
A Stroll Through Capitola Village

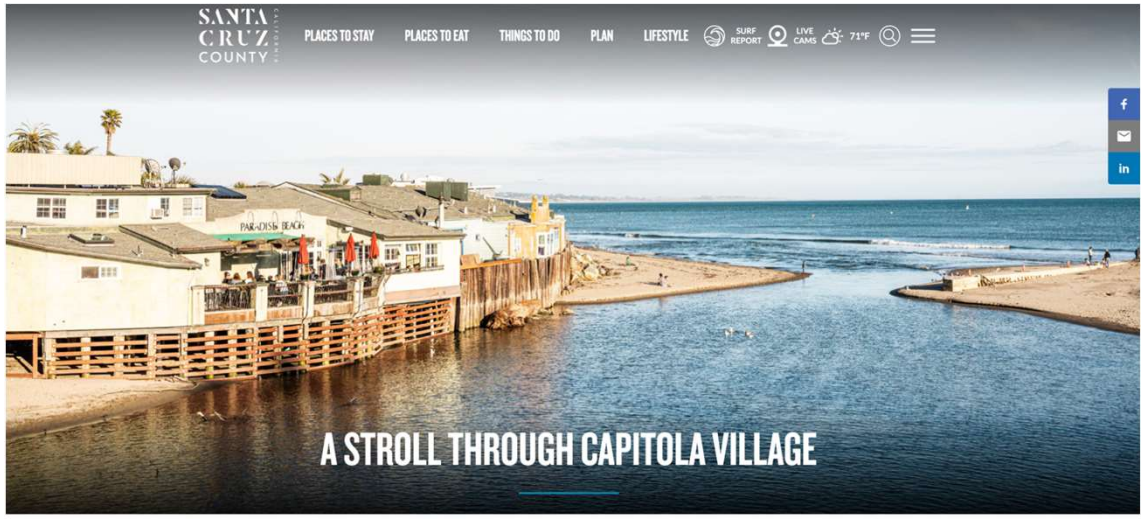
Other Recent Notable Capitola Features:

Capitola Rod & Custom Classic Car Show

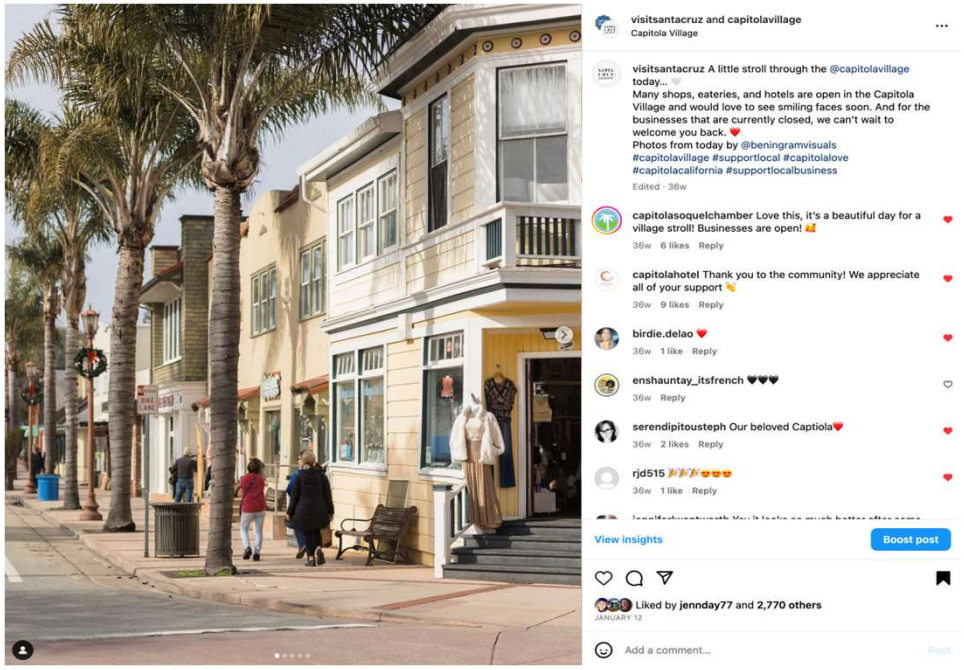
Social posts/photography/video content. Posted to Instagram and TikTok, as well as gathered content for future event promotion

Capitola Art & Wine Festival

Posted to TikTok post, as well as gathered content for future use of event promotion.



RECENT CONTENT : PHOTOGRAPHY



January 12, 2023

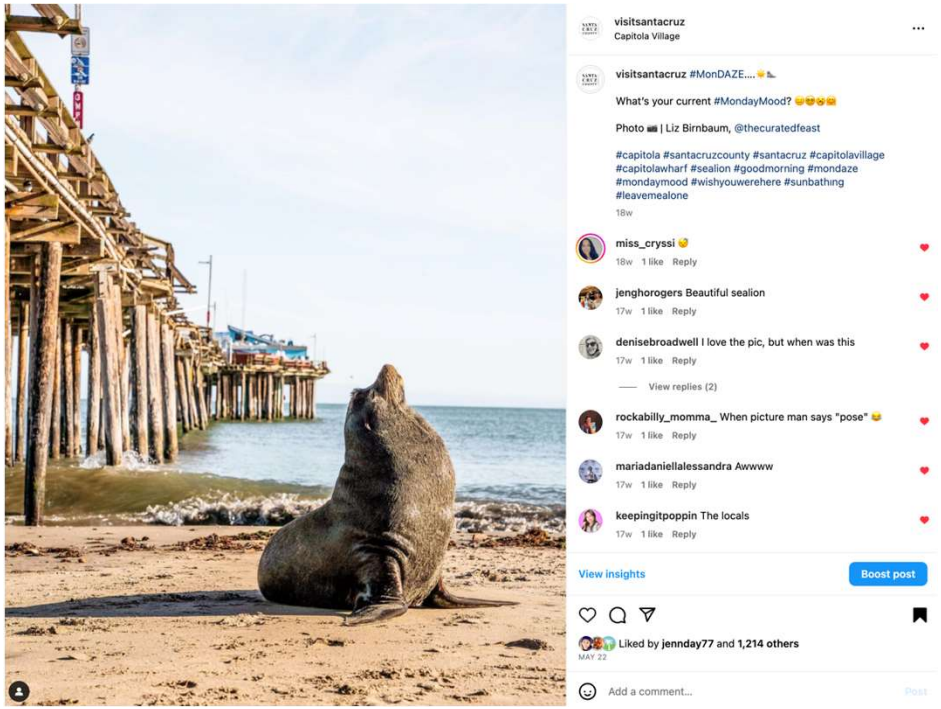
The news and media left many to believe the Capitola Village was inhabitable, “washed away,” and closed for business indefinitely.

Our photographer Ben Ingram took these shots that showed many businesses open and the vibrancy of the Village still shining.

We posted several of the photos to social media the same day.

The Capitola Village businesses were so grateful for the promotion as many businesses were eager to welcome back visitors and locals.

RECENT CONTENT : PHOTOGRAPHY



April 2023

Our other talented photographer, Liz Birnbaum captured images from Capitola, and she took several outstanding shots, including the one seen here.

Several of these photos have been used across our website, in blogs, in social media posts, and come 2024, in our annual calendar.

RESULTS

: EXPERIENTIAL
: INNOVATIVE
: EQUITABLE
: ACHIEVABLE
: REVENUE-FACING

SANTA CRUZ COUNTY CALIFORNIA

THANK YOU.

Terence Concannon, CATP

NAMI Santa Cruz County

National Alliance on Mental Illness

Human Race 2019

Mental Health Numbers

(before the pandemic)

1 in 5 adults lived with a mental health condition each year

1 in 6 youth lived with a mental health condition each year

Tragically, suicide is now the **second leading cause of death** for young people (10-34)

What happened next?

COVID turned up the heat on a boiling pot

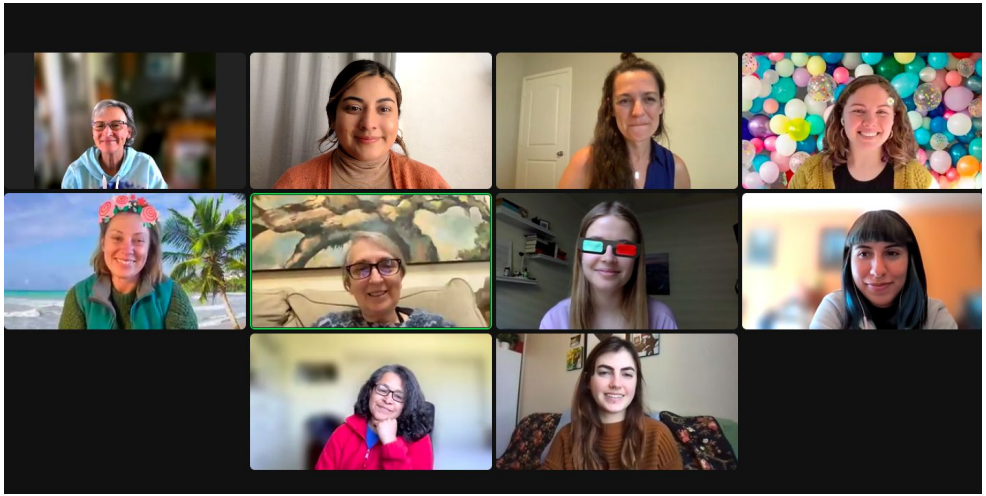
- Isolation
- Fear
- Grief/loss

Our <u>teens are still struggling</u> with anxiety, depression, sadness, and hopelessness

- 57% teen girls
- 70% LGBTQIA+ teens

Your important partnership helps to solve this problem

NAMI Santa Cruz County
National Alliance on Mental Illness



With your support, NAMISCC provided unique services to families:

- **Education**
  - Youth, adults, community learned about mental health and mental health conditions
- **Reducing Stigma**
  - So that people seek help
- **Connecting people to resources**
  - At NAMISCC or in the wider community
- **Support**
  - Compassionate support helped families find hope, healing, and community

FREE Programs for Families in English and Spanish Served Over 13,000 County-wide

Presentations
For schools, facilities, law enforcement, and the community

Support Groups
For those with mental health conditions and their loved ones

Classes
For peers, families, and providers

In 22-23, County-wide:

6177+

Family members found community and learned about mental health, mental illness, and how to support an adult loved-one with a mental health condition.

5796+

Youth, parents, school staff, and youth-supporting adults learned about mental health, received resources and found support in caring for a youth with a mental health condition.

Ending the Silence

Mental health awareness presentations for students, school staff, and families.

- Normalize mental health
- Signs & symptoms
- When to seek help
- How to help a friend

300+

students and teachers at Soquel High School participated in Ending the Silence (ETS) last school year!

78+

students at Soquel High School learned about important mental health resources from NAMISCC at a school-wide event!

As a result of ETS:

89% of students say they feel more knowledgeable about the signs of mental health conditions.

87% of students have an understanding of how to seek help.

NAMI

Help Lines

Resources &
Compassionate Support

Spanish Help Line

(831) 205-7074

English Help Line

(831) 427-8020

“I have never felt so heard and understood in this journey of parenting a child who struggles so greatly with mental illness. It feels incredibly supportive and safe.”

- Jennie, a parent in NAMI SCC’s Support Group for Parents

Capitola City Council

Agenda Report

Meeting: September 28, 2023

From: City Manager Department

Subject: City Council Meeting Minutes

Recommended Action: Approve minutes from the regular meeting on September 14, 2023.

Background: Attached for Council review and approval are the draft minutes from the regular City Council meeting on September 14, 2023.

Attachments:

1. 9/14/2023 Minutes

Report Prepared By: Julia Moss, City Clerk

Approved By: Jamie Goldstein, City Manager

City of Capitola
City Council Meeting Minutes
Thursday, September 14, 2023 – 6:00 PM

City Council Chambers
420 Capitola Avenue, Capitola, CA 95010

Mayor: Margaux Keiser
Vice Mayor: Kristen Brown
Council Members: Yvette Brooks, Joe Clarke, Alexander Pedersen

Closed Session – 5:15 PM

i. CONFERENCE WITH LEGAL COUNSEL - ANTICIPATED LITIGATION (Gov. Code § 54956.9)
Initiation of litigation pursuant to paragraph (4) of subdivision (d) of Section 54956.9: one case

Regular Meeting of the Capitola City Council – 6 PM

1. Roll Call and Pledge of Allegiance
– The meeting was called to order at 6:00 PM. In attendance: Council Members Brooks, Clarke, Pedersen, Vice Mayor Brown, and Mayor Keiser.

2. Additions and Deletions to the Agenda
– None

3. Presentations

A. *The Mayor presented a Proclamation honoring the life of Sterling "Nathan" Cross.*

4. Report on Closed Session
– The City Council met and discussed one item on the Closed Session agenda. No reportable action was taken.

5. Additional Materials
– None

6. Oral Communications by Members of the Public

- *Goran Klepic, Santa Cruz County resident, spoke about the condition of the restroom at Jade Street Park.*
- *Gerry Jensen, resident, spoke about upcoming fundraisers for the Wharf on September 27th and October 14th.*

7. Staff / City Council Comments

- *Chief Dally reminded the City Council and public of the Gun Buy Back Program at the County Sheriff's Office September 15th.*
- *Council Member Brooks requested that staff provide an update on the Jade Street Park restroom conditions.*
- *Council Member Clarke reminded the public of the Capitola Beach Festival on September 23rd and 24th.*

8. Consent Items

A. City Council Meeting Minutes
Recommended Action: Approve minutes from the regular meeting on August 24, 2023.

B. City Check Registers
Recommended Action: Approve check registers dated August 04, 2023 and August 18, 2023.

C. Grand Jury Response – Honoring Commitments to the Public
Recommended Action: Approve the responses to the Grand Jury Report and direct the City Clerk to submit the completed response packet pursuant to California Penal Code Section 933.05.

D. Purchasing and Procurement Policy and Ordinance
Recommended Action: Introduce, by title only, waiving further reading of the text, an ordinance amending Chapter 3.16 of the Capitola Municipal Code pertaining to Purchasing and Purchasing Contracts; and adopt revised Administrative Policy III-4: Purchasing and Procurement Policy.

E. Chapter 18.02 Affordable (Inclusionary) Housing
Recommended Action: Adopt an ordinance of the City of Capitola amending Chapter 18.02 of the Capitola Municipal Code, Affordable (Inclusionary) Housing.

F. CalOES Designated Agents for Disaster Assistance
Recommended Action: Adopt a resolution certifying the Capitola staff members who are authorized to submit CalOES paperwork.

G. Designation of Loading Zone for the Capitola Hotel
Recommended Action: Adopt a resolution establishing a loading zone adjacent to the frontage of 210 Esplanade (Capitola Hotel).

H. Surf Cameras on the Capitola Wharf and the Bandstand Pavilion
Recommended Action: Authorize the City Manager to execute an agreement with Surfline/Wavetrak, Inc. to install and maintain new surf camaras on the Capitola Wharf and maintain existing surf cameras on the Bandstand Pavilion at no cost to the City.

Motion to approve the Consent Calendar: Vice Mayor Brown
Seconded: Council Member Brooks
Voting Yea: Council Members Brooks, Clarke, Pedersen, Vice Mayor Brown, and Mayor Keiser

9. General Government / Public Hearings

A. Mall Redevelopment Land Use Study
Recommended Action: Authorize the City Manager to execute an agreement with Kosmont Companies for the Capitola Mall Redevelopment Land Use Study in the amount of $25,000.

Community Development Director Herlihy presented the staff report.
Council Member discussion included a request to include Housing Element outcomes in the scope of work for this agreement and suggested that MBEP be included in the Technical Committee.

Motion to authorize the City Manager to execute an agreement with Kosmont Companies: Council Member Brooks
Seconded: Vice Mayor Brown
Voting Yea: Council Members Brooks, Clarke, Pedersen, Vice Mayor Brown, and Mayor Keiser

B. City Hall Needs Assessment and Alternatives Analysis
Recommended Action: Authorize the City Manager to execute a Professional Services Agreement with Group 4 Architecture for Phase 1 of the City Hall Sites Needs Assessment and Alternatives Analysis Report in the amount of $49,950.

Community Development Director Herlihy presented the staff report.
Council Member discussion included requests to modify the scope of work to remove certain elements that staff could conduct.

Motion to authorize the City Manager to execute an agreement with Group 4 Architecture with additional direction to negotiate the scope of work: Vice Mayor Brown
Seconded: Council Member Clarke
Voting Yea: Council Members Brooks, Clarke, Pedersen, Vice Mayor Brown, and Mayor Keiser

C. Pedestrian Pathway from the Upper Beach and Village Parking Lot to Monterey Avenue
Recommended Action: Direct staff to proceed with developing the final design of pedestrian pathway from the Upper Beach and Village Parking Lot to Monterey Avenue consistent with pathway configuration Alternative 3, as described in the staff report.

Public Works Director Kahn presented the staff report.
Council Member discussion included clarification on tree replacement sizing.

Motion to direct staff to develop the final design as presented in Alternative 3 : Council Member Clarke
Seconded: Council Member Pedersen
Voting Yea: Council Members Brooks, Clarke, Pedersen, Vice Mayor Brown, and Mayor Keiser

D. Long-Term Strategic Planning
Recommended Action: Provide feedback regarding the development process for a longer-term City of Capitola Strategic Plan.

Chloe Woodmansee, Assistant to the City Manager, presented the staff report.

The City Council provided feedback to staff and recommended creation of a living document, recognition of the importance of priorities and strategies for the City, a request for a regional element of the plan, and the importance of an operational element which aligns with annual City Council goals.

E. Interim Building Official
Recommended Action: Adopt a resolution for an exception to the 180-day wait period per Government Code Section 7522.56 & 21221(h) and approve the appointment of Robin Woodman as the Interim Building Official-Retired Annuitant.

Chloe Woodmansee, Assistant to the City Manager, presented the staff report.

Motion to adopt the resolution: Vice Mayor Brown
Seconded: Council Member Pedersen
Voting Yea: Council Members Brooks, Clarke, Pedersen, Vice Mayor Brown, and Mayor Keiser

F. City Council Appointments to City Advisory Bodies
Recommended Action: Appoint members of the public to the City of Capitola Arts and Cultural Commission.

City Clerk Moss presented the staff report.

Motion to appoint Mario Beltramo to a term expiring 12/31/2024: Vice Mayor Brown
Seconded: Council Member Brooks
Voting Yea: Council Members Brooks, Clarke, Pedersen, Vice Mayor Brown, and Mayor Keiser

10. Adjournment – *Adjourned at 7:19 PM to the next regularly scheduled meeting on September 28, 2023.*

ATTEST:

Margaux Keiser, Mayor

Julia Moss, City Clerk

ADMINISTRATIVE POLICY

Number: III-4
Issued: August 29, 2002
Revised: 3/9/06
7/26/12
10/27/16
9/14/23
Jurisdiction: City Council

PURCHASING & PROCUREMENT POLICY

PURPOSE

To establish policies and procedures to establish efficient procedure, secure supplies, services and equipment at the lowest possible cost, maintain financial control over purchases, define authority in the purchasing system, and assure quality of purchases.

POLICY

The Purchasing and Procurement Policy has been developed in order to achieve the following objectives:

A. Establish authority, responsibility, and accountability for purchasing activities conducted on behalf of the City.

B. Ensure competition and impartiality in all purchasing transactions to the maximum extent possible.

C. Standardize procedures where appropriate to ensure that City-wide policies and goals are achieved.

D. Maintain department responsibility, initiative, and flexibility in evaluating, selecting, and purchasing goods and services.

E. Implement simple yet effective internal control procedures that appropriately support planning, maximize productive use of public funds, and protect City assets from unauthorized use.

F. Communicate City-wide purchasing goals, policies and procedures to departmental staff involved in purchasing activities.

G. Decentralize decision-making to the maximum extent possible consistent with prudent review and internal control procedures.

AUTHORITY

The City's purchasing ordinance delegates purchasing authority to the City Manager, as well as any other representatives designated by the City Manager. The maximum purchasing authority level of the City Manager is defined in Section 3.16.050 of the Capitola Municipal Code as $50,000; with the exception of single capital equipment purchases that do not exceed $75,000 and are approved in the budget.

Each year, the City Manager will approve purchasing authority levels on an Expenditure Authorization Form. The delegated purchasing levels shall not exceed the City Manger's purchasing authority.

The City Manager also has the authority to approve individual changes orders up $50,000. If cumulative change orders exceed $50,000, or 10% of the original contract amount, they must be approved by City Council.

RESPONSIBILITY

The City maintains a decentralized purchasing system; and Department Heads are responsible for distributing, advertising, collecting and evaluating all procurement activities conducted within their Departments with Finance Department assistance.

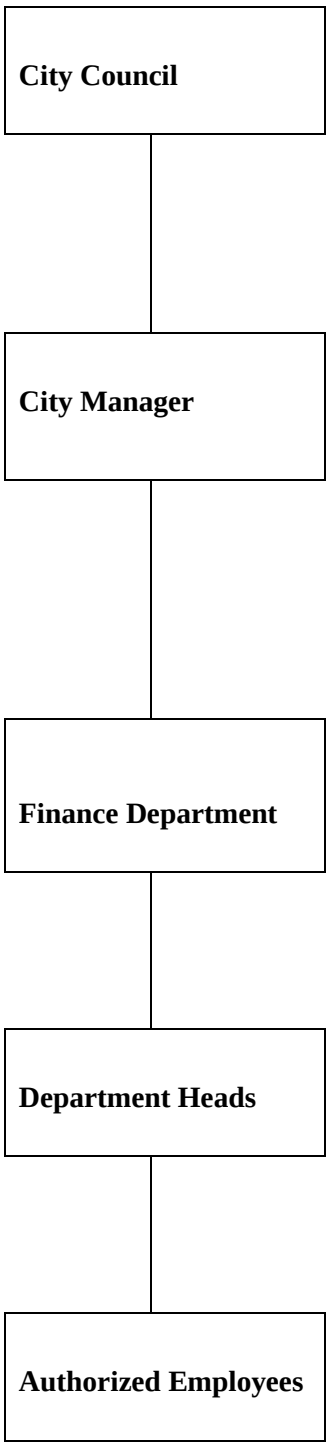
A. Employees – Each employee is responsible for following these practices. Violation of this policy may result in disciplinary action, termination of employment, or criminal prosecution.

B. Department Heads – Department Heads are responsible for ensuring that all employees of their department who conduct purchasing activities possess a thorough understanding of these standards of ethical conduct and prohibited practices.

C. City Manager – The City Manager is responsible for ensuring that all Department Heads who conduct purchasing activities possess a thorough understanding of these standards of ethical conduct and prohibited practices.

Additional purchasing responsibilities are outlined in the chart presented below:

Purchasing System Responsibilities



Purchasing Policies and Ordinance

- Adopts Purchasing Ordinance
- Approves Purchasing and Procurement Policy
-
- Delegates authority to award contracts to the City Manager
- Awards contracts if they exceed the budgeted amount

Purchasing Policies, Ordinances, and Resolutions

- Implements purchasing policies
- Delegates purchasing authority
- Awards major contracts
- Approves Bids/RFP's
  (Contingent upon Council approval in the budget)
- Approves single Capital Equipment purchases up to $75,000
  (Contingent upon Council approval in the budget)

Administrative Policies and Procedures

- Develops and implements purchasing guidelines
- Monitors and evaluates system performance
- Maintains financial project files for Capital Project over $50,000
- Sets payment schedule
- Approves authorized purchase orders up to $50,000
- Assists departments with purchasing needs

Organization Wide Procedures

- Develops and implements departmental purchasing procedures
- Delegates department purchasing authority
- Approves major departmental purchases

Department Procedures

- Purchases, receives, and pays for goods and services in accordance with the City and departmental guidelines
- Prepares necessary bid documents
- Maintains required purchasing records
- Manages department inventories

PURCHASING STANDARDS OF CONDUCT

Every employee or official engaged in purchasing activities on behalf of the City is required to employ the following standards of conduct:

- Consider the interests of the City first, in all transactions
- Carry-out established policies of the City
- Seek to obtain the maximum value for each expenditure of public funds
- Inspect materials, supplies and equipment delivered to determine their conformance with the specifications set forth in the order or contract
- Maintain confidentiality of information furnished by vendors and/or contractors regarding price, terms, performance specifications, or other data prior to a bid opening. All information that is presented during the public bid opening will be made available after the award.

The following practices are specifically prohibited in performing purchasing activities on behalf of the City:

- Having a financial or personal beneficial interest (directly or indirectly) in any contract or purchase
- Accepting or receiving (directly or indirectly) from any person, firm, or corporation to who any contract or purchase order may be awarded any money or anything of value, or promise or obligation or contract for future reward or compensation. Inexpensive advertising items bearing the name of the firm - such as pencils, pens, paperweights, or calendars - are not considered articles of value or gifts in relation to the policy
- Using position or status in the City to solicit (directly or indirectly) business of any kind; or to purchase products at special discounts or upon special concessions for private use from any person or firm who sells or solicits sales to the City.
- Dividing purchases with the intent to circumvent the purchasing authority levels

DELEGATION OF CONTRACTING AUTHORITY

A. The City Council retains all contracting authority not specifically delegated in this Policy. This Policy shall supersede all ordinances, resolutions and policies related to the City's procurement system adopted prior to adoption of this Policy. In the event of an inconsistency between this Policy and any prior ordinances, resolutions or policies of the City Council, this Policy shall control.

B. Any delegation of contracting authority contained in this Policy shall only be exercised (a) in accordance with state law, City ordinances and adopted City policies, as applicable, and (b) only if adequate funds have been included in the approved City Budget for the applicable year or otherwise appropriated by the City Council.

CITY ATTORNEY CONTRACT REVIEW

The City Attorney shall approve all contracts, including amendments to contracts, as to form and legality prior to the execution of the contract by the authorized City official. The City Attorney's approval shall be evidenced by his or her signature on the contract. City Attorney approval on change orders to public projects is not required, but may be requested, at the discretion of the City Manager or Department Head.

LOCAL VENDOR PREFERENCE

Departments are encouraged to do business with Capitola-based businesses due to the benefit to the community and the advantages in timing and availability. This preference should be given whenever it is legal, economical, and results in competitive product or service. Purchasers will actively seek to identify local vendors interested and able to conduct business with the City of Capitola. It is important that purchasers include in their inquiry or invitation to bid, the opportunity for vendors to identify themselves as local and to provide necessary supporting evidence (see definition of local vendor).

Bids, quotes, or offers submitted by Capitola-based vendors will be credited with the current local (City) sales tax and local (City) transactions & use tax in effect. This net bid will be used to compare bids. In the event of a tie, bids submitted by Capitola vendors will be given preference.

A. Purchasing goods and services from local vendors is desired because it stimulates the local economy and recognizes that our local vendors are valued members of our community. If factors such as quality, previous performance, and availability are equal among vendors, a vendor whose business is located within the City limits shall be awarded a contract if their quote or bid is within 5% of the low bid.

B. Local preference does not apply to public projects, purchases procured under federal or state requirements, or cooperative purchases with other agencies.

C. The vendor must have a valid City business license and employ at least one full-time employee located at a City business address.

D. Local bidders must bid with the same specification as required of non-local bidders.

ALTERNATIVE FUEL VEHICLES

Vehicles powered by clean alternative fuels as defined by the Energy Policy Act of 1992 and other energy efficient advanced technology vehicles shall be given consideration when purchasing new and replacement fleet vehicles

TERMINOLOGY

Best Value (Lowest Responsible Bidder): Best value is largely based on cost; however, the following factors could be considered in awarding a contract: Skills of the contractor, ability to provide supplies or services; timely processing; and compliance with governing statutes. The complete definition of best value is provided in Section 3.16.040 (A) of the Municipal Code.

Bid: Formal process to obtain lowest responsive responsible bidder or price for materials, supplies and services, and equipment

Consultant or Professional Services: Services of an attorney, engineer, doctor, financial consultant, planning or environmental consultant, investment advisor, bank or trustee office, or other professional

Contract: A written agreement between two or more persons setting forth a matter of performance and compensation or consideration given for the performance. The term contract includes, but is not limited to; purchase orders, contract for services, an addendum or change order or a letter agreement.

Local Business (Local vendor/Capitola-based business): Any business which has a retail outlet within city limits of the City of Capitola and holds the required licenses and permits for conducting its business within the City.

Maintenance: Routine, recurring, and usual work for the preservation or protection of any publicly owned or publicly operated facility for its intended purposes. It also includes minor painting, resurfacing of streets less than one inch; and landscape maintenance. This definition is provided in Section 22002 (c) of the Public Contract Code and should be contrasted with Public Project.

Open Market Purchases: Purchases of supplies, equipment, and general services from $5,000 - $25,000.

Over the Counter or Informal Purchases: Purchases under $5,000 made by authorized personnel.

Petty Cash: Cash used to reimburse authorized purchases up to $80. All reimbursements must be accompanied by a receipt.

Public Project: Construction, reconstruction, erection, alteration, renovation, improvement, demolition, and repair work involving any publicly owned, leased, or operated facility. This can also include the painting or repainting of publicly owned, leased, or operated facility. This definition is provided in Section 22002 (c) of the Public Contract Code and should be contrasted with the definition of Maintenance.

Purchase Order: A document used to acknowledge acceptable of a bid quotation or offer, and a contractual relationship is established upon its issuance and acceptance by the vendor.

Request for Proposal (RFP): An offer in to provide materials, supplies or services where the City selects vendor/consultant usually based upon criteria specified in Request for Proposal such as competence, qualifications and expertise in the field. Price is not the sole basis for selection, but may be considered in the criteria for evaluating proposals. Typically used for consultant or professional service contracts.

General Services: Any work performed or services rendered by an independent contractor, with or without the furnishing of materials such as a professional consultant.

Sole Source: Sole source purchases are used where no secondary source is reasonably available precluding the use of a competitive process.

ENCUMBRANCE OF FUNDS

A. Except in cases of emergency, or by order of the City Council, purchase orders shall not be issued unless there exists an unencumbered appropriation in the department budget against which the purchase order is to be charged.

B. Purchase orders do not roll over from one fiscal year to the next if unused, except for contract and professional services procured by an approved contract with terms that cross fiscal years. All other purchase orders shall be used in the fiscal year they were issued. In the event a planned purchase is delayed and will not occur until the next fiscal year, a new purchase order must be requested by the Department Head in the new fiscal year. For budget purposes, expenditures for goods or services will be realized based upon the date the order/service is received.

C. Invoices shall not be coded based upon budget lines that have unused/available funds. Invoices shall be coded to the correct budget line item according to the nature of the goods or services provided. It is the responsibility of the Department Head to request budget adjustments as needed to allow for the correct coding of invoices.

UNLAWFUL PURCHASES OR CONTRACTS

If any officer or employee purchases or contracts for any goods or services contrary to the provisions of these Procedures, such purchase order or contract may be void and of no effect. The staging or splitting of the purchase of goods or procurement of services, without proper justification or to avoid the authorization limits, is prohibited.

RECORD KEEPING

Each department is responsible for maintaining its own purchasing and contracting records when formal council action was not required. ALL ORIGINAL, EXECUTED CONTRACTS MUST BE PROVIDED TO THE CITY CLERK, WHO SHALL MAINTAIN SUCH ORIGINAL EXECUTED CONTRACTS IN ACCORDANCE WITH THE CITY'S RETENTION SCHEDULE REGARDLESS OF THE REQUIRED APPROVAL LEVEL (i.e. Department Head, City Manager, City Council). Upon expiration of the term of a contract for any reason, any bids, specifications, and other pertinent data shall be retained by the department in accordance with the City's adopted document retention schedule. These are public records and available for public inspection upon request.

SHARED FOLDER

In order to ensure proper record keeping a shared folder shall be created to track all aspects of a project. A list of items to be kept electronic include: bid documents, contract, change orders, purchase

orders, invoices, and communications that impact the overall project. Each department is responsible to save a copy of their responsible aspects of the project to the shared folder. The shared folder can also include the Financial Accounting System documents.

PURCHASING SYSTEM OVERVIEW

A general overview of the City's purchasing procedures; thresholds, and responsibilities are presented in the following charts. Detailed procedures for each Purchasing Category are provided in subsequent sections of this policy:

Purchasing System Chart

Scope	Category	Features
Supplies Equipment Operating Services Maintenance Services Professional Services(1)	Less than $5,000	- No Specific requirements - Competitive bidding to be used when practical - Bid award by department
	$5,000 - $25,000	- Department solicits, and documents, at least three proposals - Public projects require noticing - Bid award by Finance via purchase order
	Greater than $25,000	- Formal Bid/RFP documents - Advertising for sealed bids/proposals - City Manager approves Bid/RFP document and the solicitation of bids/proposals - Contract award generally delegated by Council to the City Manager if within budget
Capital Equipment (Authorized in Budget) (Authorized in Budget)	$25,001 - $75,000	- Informal Bid/RFP documents - Solicit a minimum of three bids/proposals, advertise if appropriate - City Manager approves Bid/RFP document and soliciting bids/proposals - Bid awarded by Finance via purchase order
Public Projects	Alternative Bid Procedures	- Public projects, as defined by the Uniform Public Construction Cost Accounting Act, Section 22000 et seq., of the Public Contract Code, may be let to contract alternative bidding procedures, - in a manner consistent with the applicable dollar thresholds, as set forth in Section 22032 of the Public Contract Code, as may be amended - from time to time

(1) Additional information related to Professional Services/RFP's is provided in the Supplemental Information Section.

(2) The Capitola Municipal Code and this Administrative Procedure provides additional guidelines regarding emergency situations.

PURCHASING CATEGORIES AND PROCEDURES

I. General Purchases under $5,000

- Purchases under $5,000 may be made by an authorized Purchasing Designee. A Department Head, or his/her designee, is authorized to purchase goods or procure services (except professional services) for an amount of Five Thousand Dollars ($5,000) or less, if adequate funds have been appropriated by the City Council in the budget. City Council appropriation of funds is required prior to such purchase or procurement.

- No competitive process is required, but the Department Head shall endeavor to purchase goods or procure services at the lowest cost commensurate with the quality needed.

II. Open Market Purchases - Purchases between $5,000 and $25,000

The purchase of supplies, equipment, and general services of a value from $5,000 to $25,000 may be made by authorized personnel. An additional bidding requirement is outlined for purchases that are defined as a Public Project.

1. The City Manager, or his/her designee, is authorized to purchase goods or procure services for an amount more than Five Thousand Dollars ($5,000) and up to Twenty-Five Thousand Dollars ($25,000), if adequate funds have been appropriated by the City Council in the budget. City Council appropriation of funds is required prior to such purchase or procurement.

2. The department must seek three (3) oral or written quotes and document the receipt of the quotes. The vendor offering the best value, after considering any local preference, shall be selected. For the purchase of goods, if the lowest price quote is not selected, the Department Head shall document in the file the basis for the selection of the vendor.

3. A contract may be required for the purchase of goods, and a contract is required for the procurement of services. All contracts are to be in a form approved by the City Attorney. Contracts are generally not required for the routine purchase of goods, such as purchasing office supplies, tires or paper goods. However, whenever the purchase of goods involves a special or unique requirement, a contract should be entered into between the City and the vendor. When in doubt regarding whether a contract is required or advisable, consult with the City Attorney.

4. If it is reasonably anticipated by the Department Head that the annual total cost of a particular good or service would exceed $25,000 (excluding public projects), then incremental purchases of that good or service shall be pursuant to a contract approved by the City Council. The contract can be for a per service hour or per item rate but must be renewed according to the procedures set forth in this ordinance at the end of the contract term. For example, if a department normally purchases 300 tires annually at a cost exceeding $25,000 overall, which would require the department to seek (3) three oral or written quotes and the approval of the City Council if the purchase was completed all at once, then incremental purchases of 50 tires shall be pursuant to a contract specifying the per tire rate approved by the City Council. The contract shall be valid for a minimum of one (1) year and it is the responsibility of the Department Head to ensure each invoice received from the consultant is calculated at the

approved rate. The purpose of this provision is to achieve uniformity and savings in the costs associated with goods or services provided by the same contractor/vendor.

5. The staging or splitting of the purchase of goods or procurement of services, without proper justification or to avoid the authorization limits, is prohibited.

6. Amendments to a purchase order and/or contract which result in the total amount exceeding the authority of the City Manager shall require City Council approval.

III. Formal Purchases - General, services, supplies, and equipment greater than $25,00 (excluding public works projects as defined by Public Contracting Code section 22002(c)).

A. Request for Quotes/RFP's shall include, but not be limited to, the following:

1. A general description of the item(s) or services to be purchased;
2. The location where quote/RFP specifications may be secured;
3.
4. The location and deadline for submission of quote/RFP

B. Notices requesting Quotes/RFP's shall be made as follows:

1. For supplies, services, and equipment, notices inviting quotes/RFPs shall be published on the City's website.

2. The City may also give such other notice as it deems appropriate

C. Rejection of Quotes/RFP's
The purchasing authority may reject:

1. Any quote or proposal that fails to meet the bidding requirements in any respect

2. All quotes or proposals, for any reason whatsoever, and may readvertise for new bids or abandon the purchase

3. In the case of public projects, the council may, by passage of a resolution by a four-fifths vote, declare that the project can be performed more economically by employees of the City and may have the project done by force account

D. Bids/RFP's - None Received
If no bids are received the purchase may be made through negotiated contract or other process approved by the Finance Director.

E. Contract Award
Subject to the approval of the City Manager, contracts shall be awarded by the purchasing authority to the quote/proposal which represents the best value to the City as defined in Section 3.16.040, except as follows:

1. If two or more quotes/proposals received are for the same total amount or unit price, quality

and service being equal, and if the discretion of the purchasing authority the public interest will not permit the delay of readvertising for quotes/proposals, then the purchasing authority may accept the one he or she chooses or the lowest quote/proposal obtained through subsequent negotiation with tied submitters.

2. Exceptions. The quotation procedure under this section may be dispensed with for purchases greater than twenty-five thousand dollars where supplies and equipment are purchased through cooperative purchasing arrangements with the state or other group of multiple governmental entities.

3. Sellers, vendors, suppliers and contractors who maintain places of business located within the limit of the City shall be given preference, if quality, price, service, and all other factors are equal.

The basis upon which the award is made shall be in writing.

F. Insurance
Insurance requirements will be provided via Purchase Order terms and conditions, or Request for Proposal terms and conditions information, or City contract.

G. Bidding Process Questions

Any questions received to the Project Manager during the bidding process should be supplied to all plan holders with corresponding answers. If the potential bidder asks the questions verbally, then the project manager shall record the questions and answer given and provide to all plan holders.

H. Change Orders
Projects at times will require change orders. Change Orders can be approved by the City Manager for amounts not to exceed $50,000, or 10% of the original contract, whichever is larger. The change orders, once approved, will be executed by the Finance department, and finance will make corresponding Purchase Order Adjustments.

I. Project Folder
The Department will keep a project folder for contracts over $50,000. The Project Folder will include proof of the Bidding process, copy of bid proposal costs, contract, purchase order, contract amendments, and all associated costs in relations to the project. The project folder shall also have copies of prudent communications. The project folder can be kept electronically on a shared drive and shall be destroyed upon expiration of the applicable retention period as outlined in the City's retention schedule.

J. Project Closeout
Upon completion of a project, the project shall be closed out with the City Council. In the project closeout the project is accepted as complete thus releasing any and all retention. The closeout will also provide a summary of the budget and total cost of the project. If the project is over budget, then additional funds need to be identified and if the project is under budget then the reallocation of those need to be identified.

IV. <u>Capital Equipment Purchases between $25,001 - $75,000</u>
Section 3.16.050 (A)(2) of the Municipal Code provides the City Manager with the authority to approve contracts for single equipment purchases based on the following criteria:

- Single equipment purchases are not greater than $75,000
- The equipment was clearly identified and described in the budget
- City Council approves the capital equipment purchase in the budget
- The equipment description listed in the budget is consistent with the item purchased
- The final cost does not exceed the amount approved in the budget

V. Alternative Bid Procedure for Public Projects – Informal Bid Procedures

Public projects, as defined by the Uniform Public Construction Cost Accounting Act, Section 22000 et seq., of the Public Contract Code, may be let to contract alternative bidding procedures, in a manner consistent with the applicable dollar thresholds, as set forth in Section 22032 of the Public Contract Code, as may be amended from time to time.

Where a public project is to be performed, and is eligible to utilize the informal bidding provisions of subsection (b) of Section 22032 of the Public Contract Code, as may be amended from time to time, the following procedures shall apply:

(a) A notice inviting abbreviated bids shall be mailed or emailed to all contractors for the category of work to be bid, as shown on the list developed in accordance with Section 3.16.085, and to all construction trade journals as specified by the California Uniform Construction Cost Accounting Commission in accordance with Section 22036 of the Public Contract Code, unless the product or service is proprietary. Additional contractors and/or construction trade journals may be notified at the discretion of the department soliciting bids; provided however:

(1) If there is no list of qualified contractors maintained by the city for the particular category of work performed, the notice inviting bids shall be sent only to the construction trade journals specified by the commission.

(2) If the product or service is proprietary in nature such that it can be obtained only from a certain contractor or contractors, the notice inviting abbreviated bids may be sent exclusively to such contractor or contractors.

(b) All mailing of notices to contractors and construction trade journals pursuant to subsection (a) shall be completed not less than ten calendar days before bids are due.

(c) The notice inviting informal bids shall describe the project in general terms and how to obtain more detailed information about the project and state the time and place for the submission of bids.

(d) For public projects that are under seventy-five thousand dollars ($75,000) and have followed these informal bidding procedures, the city manager may award the contract.

(e) If all bids received are in excess of two hundred thousand dollars, or the limits established by subsection (d) of Section 22034 of the Public Contract Code, whichever is higher, the city council, by adoption of a resolution by a four-fifths vote, may award the contract, at no more than two hundred twelve thousand five hundred dollars, or the limit established by subsection (d) of Section 22034 of the Public Contract Code, whichever is higher, to the lowest responsible bidder, if it determines the cost estimate was reasonable.

VI. Public Projects – Formal Bid Procedures

Contracts for public projects as defined by the Uniform Public Construction Cost Accounting Act, Section 22000 et seq., of the Public Contract Code, in an amount exceeding the current limit as specified in subsection (c) of Section 22032 of the Public Contract Code, as may be amended from time to time, shall be accomplished using the formal bidding procedure described in this section.

(a) Notice Inviting Bids. Notices inviting bids shall distinctly describe the project, shall state where bid blanks and specifications may be secured, and shall state the time and place for the receiving and opening of sealed bids.

(1) Published Notice. Notice inviting bids shall be published at least fourteen calendar days before the date of opening the bids in a newspaper of general circulation, printed, and published in the city.

(2) Construction Trade Journals. The notice inviting formal bids shall also be mailed, and emailed to all construction trade journals, and posted on the city's website, or other website used for bidding on public projects, as specified by the California Uniform Construction Cost Accounting Commission in accordance with the requirements of Section 22036 of the Public Contract Code.

(b) Bidder's Security. All bids presented in connection with the public project shall be accompanied by bidder's security in the form and amount prescribed by Public Contract Code Section 20170 et seq., which security shall be dealt with as prescribed therein. In all cases bidders shall be entitled to return of bid security provided that a successful bidder shall forfeit his or her bid security upon refusal or failure to execute the contract within ten days after the notice of award of contract has been mailed unless the city is responsible for the delay. The city council may, on refusal or failure of the successful bidder to execute the contract, award it to the next lowest responsible bidder. If the city council awards the contract to the next lowest bidder, the amount of the lowest bidder's security shall be applied by the city to the difference between the low bid and the second lowest bid, and the surplus, if any, shall be returned to the lowest bidder.

(c) Bid Opening Procedure. Sealed bids shall be submitted to the department identified in the invitation for bid documents and shall be identified as bids on the envelope. Bids shall be opened in public at the time and place stated in the public notice. A tabulation of all bids received shall be open for public inspection during regular business hours for a period of not less than thirty calendar days after the bid opening.

(d) Rejection of Bids or No Bids Received. In its discretion, the city council may reject any and all bids presented and readvertise for bids. If no bids are received, the city council may award the project by negotiated contract.

(e) Award of Contracts. Contracts shall be awarded by the city council to the lowest responsible bidder except as otherwise provided herein.

(f) Tie Bids. If two or more bids received are for the same amount or unit price, quality and service being equal, and if the public interest will not permit the delay of readvertising for bids, the city council may accept the one it chooses or accept the lowest bid made by negotiation with the tie bidders or may utilize a public drawing.

(g) Performance Bonds. The department head shall have authority to require a performance bond before entering into a contract in such amount as he or she finds reasonably necessary to protect the best interests of the city. If the department head requires a performance bond, the form and amount of the bond shall be described in the notice inviting bids.

VII. Federal Award Projects

Federal Procurement: Any procurement made pursuant to a federal award or subject to reimbursement, in whole or in part, with federal funds must comply with the City's procurement procedures, state law, and the applicable Federal Procurement Requirements, including 2 CFR § 200.322 ("Procurement of recovered materials"), 2 CFR § 200.323 ("Contract cost and price"), 2 CFR § 200.324 ("Federal awarding agency or passthrough entity review"), 2 CFR § 200.325 ("Bonding requirements"), and 2 CFR § 200.326 ("Contract provisions"). In the event of any conflict between City, state, or federal requirements, the most stringent requirement must be used. (See 2 CFR § 200.318.) City employees must comply with funding agency requests for review of technical specifications or procurement documents as provided in 2 CFR § 200.324.

VIII. Emergency Procedures

An emergency is defined as an unexpected occurrence or threatened occurrence that poses a danger, requiring immediate action to prevent or mitigate the loss or impairment of life, health, property, or essential public services, or any emergency proclaimed pursuant to Municipal Code 8.08.060.

Upon approval of the City Manager or Finance Director, authorized purchasing authorities may exceed the purchasing limits of $50.000. The following procedures are applicable to emergency purchases:

- Documentation. It will be the responsibility of the requesting department to attach a copy of the written justification of the emergency signed by the City Manager to any invoices at the time the invoice is submitted to accounts payable for payment.

- Reporting. All emergency purchases of goods and services over $50,000 will be immediately reported by the department responsible for the purchase to the City Clerk for inclusion as an information item on the Agenda for the next scheduled meeting of the City Council.

  In accordance with Chapter 2.5, Section 22050(a) of the Public Contract Code, the information on emergency purchase action shall be presented to the City Council for review and determination, by a four-fifths vote, that there is a need to continue the emergency action. This must occur within seven days after the action, or at the City Council's next regularly scheduled meeting if that meeting will occur within 14 days after the action. The emergency purchase action shall be presented to the City Council at least at every subsequent regularly scheduled meeting until the action is terminated. The City Council must determine, by a four-fifth vote, that there is a need to continue the emergency action.

SUPPLEMENTAL PURCHASING INFORMATION

I. Requests for Proposals (RFP)

Request for Proposal (RFP) are typically associated with general or professional service contracts over $5,000. This document requests a firm to submit a proposal to perform the scope of work

associated with a specific project. Cost is not the sole basis for selection in an RFP, other criteria such as experience, turn-around time, and approach to work are determining factors when evaluating a proposal. Based on the estimated cost of service, the corresponding Open Market, Formal bid, or Alternative Bid procedures are applicable.

Additional information related to the development and criteria of RFP's is listed below:

A. RFP Requirements

The RFP will be specific to the project and preparation will require some general knowledge of the project. However, preparation of the RFP should not involve any work for which the proposer would normally be compensated during the project. For example, on engineering projects, free preliminary engineering in the RFP should be discouraged. The RFP should address the following:

1) Required Information: In the RFP, the consultant shall be advised of the following requirements:

    a. Standard contract requirements
    b. Selection criteria.
    c. Date and time proposal is due.
    d. The name and telephone number of the staff member responsible for the project.

2) Selection & Evaluation Criteria. Proposals will be evaluated on the basis of the evaluation factors listed in the Request for Proposal. Respondents should be ranked based on the selection criteria. As a minimum, the following criteria will be used to evaluate the RFP.

    a. Firm experience (including work and project-related references).
    b. Specific staff experience and availability (including work and project-related references).
    c. Approved methods to accomplish the work.
    d. Scope of work and schedule
    e. cost

3) Price Considerations. Although price is always a consideration in recommending awarding the final selection, prices will not be a mandatory consideration in the initial evaluation process. At the discretion of the department, a department may opt to adopt an RFP procedure with price information in a separate sealed envelope. The envelopes shall not be opened until the highest rated firm is identified based upon demonstrated competence and professional qualifications. At that time, the price information will be compared to professional qualification to ensure that the price is fair and reasonable. If a major discrepancy between highest rated firm and the others exist, that discrepancy shall be evaluated and explained before award of the work. If not satisfactorily resolved, the department may to negotiate with the next-highest-ranked firm.

II. Sole Source

1. Materials, Supplies & Equipment:

   a. Definition. Sole source purchases are used where no secondary source is reasonably available precluding the use of a competitive process. The following are examples of circumstances, which could necessitate sole source procurements:
      1) Where compatibility of equipment, accessories or replacement parts is an important consideration;
      2) Where public utility services are to be procured;
      3) Where a sole supplier's item is needed for trial use or testing;
      4) Where a used item is offered at a bargain price and subject to prior sale;
      5) Where a cooperative purchasing agreement has been developed with another public agency that used a competitive selection process.
      6) Where supply proximity is an important consideration.

2. Consultant or General Services:

   a. In the case where a consulting firm has satisfactorily performed the previous stage of a project (e.g. a pre-design), or has acquired extensive background and working knowledge, the firm may be selected for follow-up work without solicitations from other firm upon written justification and recommendation of the department head and approval by the City Manager or designee.

   b. If a firm is a highly recognized authority in a field or specialty, or has unique specific knowledge regarding the project, then the firm may be selected without other solicitations for contracts and upon written justification and recommendation of the department head and approval by the City Manager or designee.

   c. Upon those infrequent occasions when confidence in the consultant and quality of service are important.

4. Documentation: It is the responsibility of the requesting department to maintain in their files a complete, written justification of the sole source purchase approved by the City Manager

5. Authorization & Reporting: All sole source purchases of more than $50,000 are authorized by the City Council and fully disclosed in the staff agenda report. Sole source purchases between $5,000 and $50,000 are authorized by the City Manager. Sole source purchases less than $5,000 are authorized by the Department Heads.

III. Multiple Year Contracts

1. Applicability. When it is in the best interest of the City, multiple year contracts will be allowed. High vendor "startup costs" or the need for continuity may make a multiple year contract

financially or operationally advantageous to the City. Under no circumstances should a multiple year contract be used to avoid competitive procurement procedures.

2. Termination Due to Lack of Funds. All multiple year contracts should contain a clause allowing the City to terminate the contract in thirty (30) days or subsequent fiscal years due to a lack of budgeted funds.

3. Term. The term of a multiple year contract should be clearly delineated. "Open end" contracts will not be used.

4. Authority. Multiple-year contracts are subject to the same authority levels detailed above.

5. Changes. Changes to multiple-year contracts are covered under "Change Orders" below.

6. Extension. Extension of contracts requires the approval of the City Manager via City contract amendment form.

7. Addendum. Increase in dollar amounts on an agreement, which results in an aggregate total in excess of $50,000 requires approval from the City Council.

IV. City Engineer Review and Approval

In accordance with Government Code section 830.6, the City Engineer shall have authority to review and approve the plan or design of any construction work or work of improvement to public property and for contracts for construction subject to approval by the City Manager. For contracts to be awarded by the City Council, the City Engineer shall review such plans and designs and shall recommend the approval of such plan or design by the City Council as part of its award of such contract.

This policy was approved and authorized by:

_____

Jamie Goldstein, City Manager

ORDINANCE NO. _____

AN ORDINANCE OF THE CITY OF CAPITOLA AMENDING SECTION 3.16.010, 3.16.030, 3.16.050, 3.16.075, 3.16.080 AND ADDING SECTIONS 3.16.085, 3.16.090, 3.16.095 AND 3.16.100 TO THE CITY OF CAPITOLA MUNICIPAL CODE REGARDING PURCHASING AND PURCHASING CONTRACTS

WHEREAS, By Resolution no. 3926, the City Council of the City of Capitola elected to opt into the California Uniform Construction Cost Accounting Act (Public Contract Code 22000-22045; and

WHEREAS, Public Contract Code section 22032 is periodically revised to establish new bidding requirements depending on the value of the public project at issue; and

WHEREAS, the most recent update to Public Contract Code section 22032 became effective in 2019; and

WHEREAS, the City of Capitola's Municipal Code sections regarding purchasing and purchasing contracts must similarly be amended to reflect the updates to the Public Contracting Code; and

WHEREAS, the City Council hereby desires to amend the Capitola Municipal Code to reflect recent changes to the California Uniform Cost Accounting Act.

NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF CAPITOLA DOES ORDAIN AS FOLLOWS:

Section 1. The above findings are adopted and incorporated herein.

Section 2. Section 3.16.010 – Purpose is amended as follows. New wording is shown in underline and deletions are shown in strikethrough

3.16.010 Purpose.

The purpose of this chapter is to:

A. Provide for the authority of city officers to enter into certain contracts ~~even~~ in which funds have been appropriated without a formal city council approval of the specific contract or transaction and to set forth procedural requirements; and

B. Establish efficient procedures for the purchase of supplies, equipment, ~~and~~ general services, and public projects at the lowest possible cost commensurate with quality needed, to exercise positive financial control over purchases to clearly define authority for the purchasing function, and to assure the quality of purchases; and

C. To inform those wishing to contract with the city of the authority of the city employee or official to create a binding contract; and

D. To assist the city treasurer in carrying out his or her duties under Government Code Section 41001.

Section 3. Section 3.16.030 – "General procedural requirements" is amended as follows. New wording is show in underline and deletions are shown in strikethrough.

Section 3.16.030 General procedural requirements

All contracts must be in writing and be signed in the name of the city. They may be transmitted by facsimile, ~~or~~ electronic mail, or digital signature consistent with the City's electronic signature policy..

Section 4. Section 3.16.050(A) City Manager authority is amended as follows. New wording is shown in underline and deletions are shown in strikethrough.

1. Which contains an initial maximum compensation figure of ~~twenty-five~~ fifty thousand dollars or less, or a change order not exceeding ~~seven thousand five hundred~~ fifteen thousand dollars. (Cumulative additional orders exceeding ~~twenty-five~~ fifty thousand dollars must be approved by the city council);

2. Contracts for single capital equipment purchases that do not exceed ~~fifty~~ seventy-five thousand dollars; which are clearly defined and identified in the budget;

Section 5. Section 3.16.075 Open market purchases – General services, supplies, and equipment – purchases between five thousand and twenty-five thousand dollars. New wording is shown in underline and deletions are shown in strikethrough.

A. Request ~~Invitation~~ for ~~Bids~~ Quotes or Proposals.

~~3. Public Projects Between Five Thousand Dollars and Twenty-Five Thousand Dollars. Notices inviting bids for public projects between five thousand dollars and twenty-five thousand dollars, shall be mailed to list of qualified contractors, identified according to categories of work, at least ten calendar days before the bids are due. Notices shall also be mailed within ten calendar days before the bids are due to all construction trade journals as required by the commission. If the city does not have a qualified list of contractors for the particular type of work to be performed, notices inviting bids will only be sent to the construction trade journals as required by the commission. If the product or service is proprietary in nature and can only be obtained from a certain contractor or contractors, notices inviting bids will only be mailed to such contractor or contractors.~~

B. Quotes / Proposals ~~Bids~~ – Retention. Quotations and proposals shall be submitted to the finance director who shall keep a record of all open-market orders and quotes for a period of one year after the submission of quotes or placing of orders. This record is open to public inspection. For a purchase in an amount between five thousand dollars and twenty-five thousand dollars, the quotations shall be written (including facsimile and electronic mail).

C. Rejection. The purchasing authority may reject:

1. Any quotations or proposals which fail to meet the specific purchase requirements in any respect; or
2. All quotations or proposals, for any reason whatsoever, and may invite new quotations or proposals.

D. Award of Contract. A contract shall be awarded to the quotation or proposal representing the best value as defined in Section 3.16.040. The basis upon which the award is made shall be in writing.

~~E. Public Projects—In Excess of Limit. In the event that all bids received for a construction project are more than the maximum allowed under this section, and bids were invited pursuant to the provisions of this section, the council may, by adoption of a resolution by four-fifths of a vote, award the contract, in an amount not to exceed the maximum set forth in Section 22034(f) of the Public Contract Code, to the lowest responsible bidder, if it determines that the cost estimate was reasonable. Otherwise, the bids shall be rejected; and if the agency decides to go forward with the project, shall be re-bid in accordance with the procedures set forth in Section 3.16.080. (Ord. 972 § 1, 2012)~~

Section 6. Section 3.16.080 Formal purchases – General services, supplies, and equipment greater than twenty-five thousand dollars. New wording is shown in underline and deletions are shown in strikethrough.

A. Request for ~~Notice inviting bids~~ quotes or proposals shall include, but not be limited to, the following:

1. A general description of the item(s) or services to be purchased~~, or the public work to be constructed or improved;~~

2. The location where ~~bid~~ quote or proposals ~~blanks and~~ specifications may be secured;

~~3. The time and place assigned for the opening of sealed bids;~~

~~4. The type and character of bidder's security required, if any;~~

5. The location and deadline for submission of ~~bid~~ quote or proposal.

B. Notices ~~inviting bids~~ requesting quotes or proposals shall be made as follows:

1. For supplies, general services, and equipment, notices inviting ~~bids~~ quotes or proposals shall be published ~~at least once in the official newspaper of the city, with the first publication occurring at least ten calendar days before the date of opening the bids~~ on the City's website.

~~2. For public projects greater than twenty-five thousand dollars, notices inviting bids distinctly describing the project shall be published at least once in the official newspaper of the city, with the first publication at least fourteen calendar days before the date of the opening bids. Notices inviting bids distinctly describing the project shall also be mailed at least thirty calendar days before the date of opening bids to all construction journals as required by the commission~~.

3. The city may also give such other notice as it deems appropriate.

~~C. Bids – Security Requirement. Bidder's security may be required when deemed necessary by the purchasing authority. When required, the security form, amount and conditions, will be included in the bid documents. Bidders shall be entitled to return of bid security. However, a successful bidder shall forfeit his or her bid security upon refusal or failure to execute a contract within fifteen days after notice of award of that contract, unless the city is responsible for the delay. The contract may be awarded to the next lowest responsible bidder upon the refusal or failure of the successful bidder to execute the contract within the time herein prescribed.~~

~~D. Bids – Opening and Retention. Sealed bids shall be submitted to the purchasing authority and shall be identified as bids on the envelope. Bids shall be opened in public and read aloud at the time and place stated in the public notice. A tabulation of all bids received shall be available for public inspection during regular business hours for a period not less than thirty calendar days after the bid opening.~~

E. Rejection of ~~Bids~~ quotes or proposals. The purchasing authority may reject:

1. Any ~~bid~~ quote or proposal that fails to meet the bidding requirements in any respect; or

2. All ~~bids~~ quotes or proposals, for any reason whatsoever, and may readvertise for new ~~bids~~ quotes or proposals or abandon the purchase;

~~3. In the case of public projects, the council may, by passage of a resolution by a four-fifths vote, declare that the project can be performed more economically by employees of the city and may have the project done by force account.~~

F. ~~Bids~~ Quotes or Proposals – None Received. If no ~~bids~~ quotes or proposals are received the purchase may be made through negotiated contract or other process approved by the finance director~~, including, in the case of public projects, performing the work by employees of the city by force account~~.

G. Contract Award. Subject to the approval of the city manager, contracts shall be awarded by the purchasing authority to the ~~bid~~ quote or proposal which represents the best value to the city as defined in Section 3.16.040, except as follows:

1. If ~~at the time of bid opening,~~ two or more ~~bids~~ quotes or proposals received are for the same total amount or unit price, quality and service being equal, and if the discretion of the purchasing authority the public interest will not permit the delay of readvertising for ~~bids~~ quote or proposal, then the purchasing authority may accept the one he or she chooses or the lowest ~~bid~~ quote or proposal obtained through subsequent negotiation with tied ~~bidders~~ submitters.

2. Exceptions. The quotation procedure under this section may be dispensed with for purchases greater than twenty-five thousand dollars where supplies and equipment are purchased through cooperative purchasing arrangements with the state or other group of multiple governmental entities.

~~H. Requiring Bond of Successful Bidder. The purchasing authority may require as a condition to executing a contract on behalf of the city, a performance bond or a labor and material bond, or both, in such amounts as the purchasing authority shall determine appropriate to protect the best interests of the city. The form and amounts of such bond(s) shall be described in the notice inviting bids.~~

Section 7. A new Section 3.16.085 Alternative Bid Procedures for Public Projects is hereby added to the Capitola Municipal Code as set forth below.

Public projects, as defined by the Uniform Public Construction Cost Accounting Act, Section 22000 et seq., of the Public Contract Code, may be let to contract alternative bidding procedures, in a manner consistent with the applicable dollar thresholds, as set forth in Section 22032 of the Public Contract Code, as may be amended from time to time.

Section 8. A new Section 3.16.090 Public Projects – Informal Bid Procedures is hereby added to the Capitola Municipal Code as set forth below.

Where a public project is to be performed, and is eligible to utilize the informal bidding provisions of subsection (b) of Section 22032 of the Public Contract Code, as may be amended from time to time, the following procedures shall apply:

(a) A notice inviting abbreviated bids shall be mailed or emailed to all contractors for the category of work to be bid, as shown on the list developed in accordance with Section 4.04.071, and to all construction trade journals as specified by the California Uniform Construction Cost Accounting Commission in accordance with Section 22036 of the Public Contract Code, unless the product or service is proprietary. Additional contractors and/or construction trade journals may be notified at the discretion of the department soliciting bids; provided however:

(1) If there is no list of qualified contractors maintained by the city for the particular category of work performed, the notice inviting bids shall be sent only to the construction trade journals specified by the commission.

(2) If the product or service is proprietary in nature such that it can be obtained only from a certain contractor or contractors, the notice inviting abbreviated bids may be sent exclusively to such contractor or contractors.

(b) All mailing of notices to contractors and construction trade journals pursuant to subsection (a) shall be completed not less than ten calendar days before bids are due.

€ The notice inviting informal bids shall describe the project in general terms and how to obtain more detailed information about the project and state the time and place for the submission of bids.

(d) For public projects that are under seventy-five thousand dollars and have followed these informal bidding procedures, the city manager may award the contract.

€ If all bids received are in excess of two hundred thousand dollars, or the limits established by subsection (d) of Section 22034 of the Public Contract Code, whichever is higher, the city council, by adoption of a resolution by a four-fifths vote, may award the contract, at no more than two hundred twelve thousand five hundred dollars, or the limit established by subsection (d) of Section 22034 of the Public Contract Code, whichever is higher, to the lowest responsible bidder, if it determines the cost estimate was reasonable.

Section 9. A new Section 3.16.095 Public Projects – Formal Bid Procedures is hereby added to the Capitola Municipal Code as set forth below.

Contracts for public projects as defined by the Uniform Public Construction Cost Accounting Act, Section 22000 et seq., of the Public Contract Code, in an amount exceeding the current limit as specified in subsecti€(c) of Section 22032 of the Public Contract Code, as may be amended from time to time, shall be accomplished using the formal bidding procedure described in this section.

(a) Notice Inviting Bids. Notices inviting bids shall distinctly describe the project, shall state where bid blanks and specifications may be secured, and shall state the time and place for the receiving and opening of sealed bids.

(1) Published Notice. Notice inviting bids shall be published at least fourteen calendar days before the date of opening the bids in a newspaper of general circulation, printed, and published in the city.

(2) Construction Trade Journals. The notice inviting formal bids shall also be mailed, and emailed to all construction trade journals, and posted on the city's website, or other website used for bidding on public projects, as specified by the California Uniform Construction Cost Accounting Commission in accordance with the requirements of Section 22036 of the Public Contract Code.

(b) Bidder's Security. All bids presented in connection with the public project shall be accompanied by bidder's security in the form and amount prescribed by Public Contract Code Section 20170 et seq., which security shall be dealt with as prescribed therein. In all cases bidders shall be entitled to return of bid security provided that a successful bidder shall forfeit his or her bid security upon refusal or failure to execute the contract within ten days after the notice of award of contract has been mailed unless the city is responsible for the delay. The city council may, on refusal or failure of the successful bidder to execute the contract, award it to the next lowest responsible bidder. If the city council awards the contract to the next lowest bidder, the amount of the lowest bidder's security shall be applied by the city to the difference between the low bid and the second lowest bid, and the surplus, if any, shall be returned to the lowest bidder.

(c) Bid Opening Procedure. Sealed bids shall be submitted to the department identified in the invitation for bid documents and shall be identified as bids on the envelope. Bids shall be opened in public at the time and place stated in the public notice. A tabulation of all bids received shall be open for public inspection during regular business hours for a period of not less than thirty calendar days after the bid opening.

(d) Rejection of Bids or No Bids Received. In its discretion, the city council may reject any and all bids presented and readvertise for bids. If no bids are received, the city council may award the project by negotiated contract.

(e) Award of Contracts. Contracts shall be awarded by the city council to the lowest responsible bidder except as otherwise provided herein.

(f) Tie Bids. If two or more bids received are for the same amount or unit price, quality and service being equal, and if the public interest will not permit the delay of readvertising for bids, the city council may accept the one it chooses or accept the lowest bid made by negotiation with the tie bidders or may utilize a public drawing.

(g) Performance Bonds. The department head shall have authority to require a performance bond before entering into a contract in such amount as he or she finds reasonably necessary to protect the best interests of the city. If the department head requires a performance bond, the form and amount of the bond shall be described in the notice inviting bids.

Section 10. A new Section 3.16.100 Federal Award Projects is hereby added to the Capitola Municipal Code as set forth below.

Federal Procurement: Any procurement made pursuant to a federal award or subject to reimbursement, in whole or in part, with federal funds must comply with the City's procurement procedures, state law, and the applicable Federal Procurement Requirements, including 2 CFR § 200.322 ("Procurement of recovered materials"), 2 CFR § 200.323 ("Contract cost and price"), 2 CFR § 200.324 ("Federal awarding agency or passthrough entity review"), 2 CFR § 200.325 ("Bonding requirements"), and 2 CFR § 200.326 ("Contract provisions"). In the event of any conflict between City, state, or federal requirements, the most stringent requirement must be used. (See 2 CFR § 200.318.) City employees must comply with funding agency requests for review of technical specifications or procurement documents as provided in 2 CFR § 200.324.

Section 11. Environmental Review.

The City Council finds and determines that amendment of this Ordinance, which regulates City purchasing procedures, is an administrative activity and not a project under the California Environmental Quality Act ("CEQA") because it can be seen with certainty that there is no possibility that the adoption of this Ordinance may have significant effect on the environment. If this action is determined to be a project, it is exempt from review pursuant to the "common sense" exemption in CEQA Guidelines section 15601(b)(3).

Section 12. Effective Date.

This Ordinance shall be in full force and effect thirty (30) days from its passage and adoption.

Section 13. Severability.

The City Council hereby declares every section, paragraph, sentence, cause, and phrase of this ordinance is severable. If any section, paragraph, sentence, clause, or phrase of this ordinance is for any reason found to be invalid or unconstitutional, such invalidity or unconstitutionality shall not affect the validity or constitutionality of the remaining sections, paragraphs, sentences, clauses, or phrases.

Section 14. Certification.

The City Clerk shall cause this ordinance to be posted and/or published in the manner required by law.

This Ordinance was introduced at the meeting of the City Council on the ___ day of _____ 2023, and was adopted at a regular meeting of the City Council on the ___ day of _____ 2023, by the following vote:

AYES:
NOES:
ABSENT:

_____
Margaux Keiser, Mayor

Attest: _____
Julia Moss, City Clerk

Approved as to form:

_____
Samantha W. Zutler, City Attorney

Chapter 3.16

PURCHASING AND PURCHASING CONTRACTS

Sections:

* Prior ordinance history: Ords. 120 and 425.

3.16.010 Purpose.

The purpose of this chapter is to:

A. Provide for the authority of city officers to enter into certain contracts in which funds have been appropriated without a formal city council approval of the specific contract or transaction and to set forth procedural requirements; and

B. Establish efficient procedures for the purchase of supplies, equipment, general services, and public projects at the lowest possible cost commensurate with quality needed, to exercise positive financial control over purchases to clearly define authority for the purchasing function, and to assure the quality of purchases; and

C. To inform those wishing to contract with the city of the authority of the city employee or official to create a binding contract; and

D. To assist the city treasurer in carrying out his or her duties under Government Code Section 41001. (Ord. 972 § 1, 2012; Ord. 832, 2001)

3.16.020 Limitations.

The authority created by this chapter applies only to contracts, the predominant purchase of which is the purchase by the city of goods or services; and the city's primary performance under such

contract is the payment of money. This chapter does not confer authority to authorize the payment of money for grants, gifts, or other expenditure that is without consideration.

Authority conferred in this chapter upon the city manager applies to situations in which an interim city manager is serving or in situations in which the city manager has appointed an acting city manager. (Ord. 972 § 1, 2012; Ord. 832, 2001)

3.16.030 General procedural requirements.
All contracts must be in writing and be signed in the name of the city. They may be transmitted by facsimile, electronic mail, or digital signature consistent with the City's electronic signature policy. (Ord. 972 § 1, 2012; Ord. 832, 2001)

3.16.040 Definitions.
For the purposes of this chapter, the following definitions shall apply:

A. "Best value" means the best value to the city based on all factors, including, but not limited to, the following:

1. Cost;

2. The ability, capacity, and skill of the contractor to perform the contract or provide the supplies, services or equipment required;

3. The ability of the contractor to provide the supplies, services, or equipment promptly or within the time specified without delay or interference;

4. The character, integrity, reputation, judgment, experience, and efficiency of the contractor;

5. The quality of the contractor's performance on previous purchases or contracts with the city;

6. The ability of the contractor to provide future maintenance, repair, parts, and services for the use of the supplies purchased;

7. The contractor's ability to supply or act in a timely manner;

8. Compliance by the contractor with federal acts, executive orders, and state statutes governing nondiscrimination in employment;

9. The results of any evaluation relating to performance and price, such as testing, life-cycle costing, and analysis of service, maintenance, and technical data.

B. "Change order" means a change or addendum of an executed contract.

C. "Consultant or professional services" means the services of an attorney, engineer, doctor, financial consultant, planning or environmental consultant, investment advisor, bank, or trustee officer, or other professional.

D. "Contract" means any agreement to do or not do a certain thing. "Contract" and "agreement" are synonymous. The term "contract" includes, but is not limited to, a purchase order, a contract for services, an addendum or change order or a letter agreement.

E. “Emergency” means a sudden, unexpected occurrence that poses a clear and imminent danger, requiring immediate action to prevent or mitigate the loss or impairment of life, health, property, or essential public services, or proclaimed pursuant to Section 8.08.060.

F. “General services” means and includes any work performed or services rendered by an independent contractor, with or without the furnishing of materials, including, but not limited to, the following:

1. Maintenance work as defined in Section 22002(d) of the Public Contract Code.

    a. Routine, recurring, and usual work for the preservation or protection of any publicly owned or publicly operated facility for its intended purposes,

    b. Minor repainting,

    c. Resurfacing of streets and highways at less than one inch,

    d. Landscape maintenance, including mowing, watering, trimming, pruning, planting, replacement of plants, and servicing of irrigation and sprinklers systems,

    e. Work performed to keep, operate, and maintain publicly owned water, power, or waste disposal systems, including, but not limited to, dams, reservoirs, power plants, and electrical transmission lines of two hundred thirty thousand volts and higher;

2. Repair, modifications and maintenance of city equipment and software;

3. Cleaning, analysis, testing, moving, removal, or disposal (other than by sale) of city supplies and equipment;

4. Providing temporary personnel services;

5. Providing other miscellaneous services to facilitate city operations;

6. Performing repair, demolition or other work required to abate nuisances under this code;

7. Licensing software;

8. Leasing or rental of equipment (personal property) for use by the city;

9. A maintenance agreement for equipment owned or leased by the city.

“General services” does not include:

    a. Work defined as public projects that must be put out to bid pursuant to Public Contract Code Section 22002(c);

    b. Items such as meals or transportation, which personally are consumed or utilized by the individual who contracts for the item.

G. “Public project” is defined by Section 22002(c) of the Public Contract Code as construction, reconstruction, erection, alteration, renovation, improvement, demolition, and repair work involving any publicly owned, leased, or operating facility. It also includes painting or repainting of any publicly owned, leased, or operated facility. Section 20002(d) does not include maintenance work included in subsection (F)(1).

H. “Supplies and equipment” means and includes all such items purchased on behalf of the city except for supplies or materials finished for a public project. (Ord. 972 § 1, 2012; Ord. 832, 2001)

3.16.045 Contractors list.
A list of contractors shall be developed and maintained in accordance with the provisions of Section 22034 of the Public Contract Code. (Ord. 972 § 1, 2012)

3.16.050 City manager authority.
A. The city manager is authorized to enter into and sign for and on behalf of the city, without the prior approval of the city council, a contract:

1. Which contains an initial maximum compensation figure of fifty thousand dollars or less, or a change order not exceeding fifty thousand dollars. (Cumulative additional orders exceeding fifty thousand dollars must be approved by the city council);

2. Contracts for single capital equipment purchases that do not exceed seventy-five thousand dollars; which are clearly defined and identified in the budget;

3. For which moneys have been appropriated; and

4. For which he or she determines the city has made reasonable efforts to obtain the best value.

B. In an emergency (as defined in Section 3.16.040), the city manager may authorize the expenditure of any unencumbered moneys in the emergency reserve fund, notwithstanding the fact that such moneys may not have been appropriated for such purpose, to the extent that other moneys have not been appropriated or are otherwise unavailable therefor.

C. Contracts wherein all the city’s costs will be reimbursed pursuant to an existing separate contract. (Ord. 972 § 1, 2012; Ord. 832, 2001)

3.16.060 City manager delegation of purchasing authority.
Providing the city manager first establishes written procedures, the city manager may delegate the purchasing authority for other city employees to enter into contracts for purchases of general services or supplies and equipment for twenty-five thousand dollars or less. (Ord. 972 § 1, 2012; Ord. 832, 2001)

3.16.070 Informal purchases General services, supplies, and equipment – Purchases under five thousand dollars.
Purchases under five thousand dollars may be made by persons authorized by Section 3.16.060 in the open market. There are no specific bidding requirements for these purchases; however competitive bidding should be used whenever practical. Quotations for these purchases may be

written or verbal. All purchases subject to this section will be awarded by the department either by voucher or purchase order. (Ord. 972 § 1, 2012; Ord. 832, 2001)

3.16.075 Open market purchases - General services, supplies, and equipment – Purchases between five thousand dollars and twenty-five thousand dollars.

The purchase of supplies, equipment, and general services of a value from five thousand dollars to twenty-five thousand dollars may be made by persons authorized by Section 3.16.060 in the open market, following the procedure prescribed in this section and the city manager's procedures.

A. Request for Quotes or Proposals.

1. Supplies, Equipment, and General Services Between Five Thousand Dollars and Twenty-Five Thousand Dollars. Open-market purchases shall, whenever feasible, be based on at least three quotations. The purchasing employee shall solicit quotations by written request or telephone to prospective vendors. Telephone quotations shall be memorialized in a contemporaneous writing.

2.

2. Exceptions. The quotation procedure under this section may be dispensed with for purchases between five thousand dollars and twenty-five thousand dollars where supplies and equipment are purchased through cooperative purchasing arrangements with the state or other group of multiple governmental entities.

B. Quotes / Proposals – Retention. Quotations and proposals shall be submitted to the finance director who shall keep a record of all open-market orders and quotes for a period of one year after the submission of quotes or placing of orders. This record is open to public inspection. For a purchase in an amount between five thousand dollars and twenty-five thousand dollars, the quotations shall be written (including facsimile and electronic mail).

C. Rejection. The purchasing authority may reject:

1. Any quotations or proposals which fail to meet the specific purchase requirements in any respect; or

2. All quotations or proposals, for any reason whatsoever, and may invite new quotations or proposals.

D. Award of Contract. A contract shall be awarded to the quotation or proposal representing the best value as defined in Section 3.16.040. The basis upon which the award is made shall be in writing.

3.16.080 Formal purchases – General services, supplies, and equipment greater than twenty-five thousand dollars.

A. Request for quotes or proposals shall include, but not be limited to, the following:

1. A general description of the item(s) or services to be purchased;

2. The location where quote or proposal specifications may be secured;

3. The location and deadline for submission of quote or proposal.

B. Notices requesting quotes or proposals shall be made as follows:

1. For supplies, general services, and equipment, notices inviting quotes or proposals shall be published on the City's website.

2. The city may also give such other notice as it deems appropriate.

C. Rejection of quotes or proposals. The purchasing authority may reject:

1. Any quote or proposal that fails to meet the bidding requirements in any respect; or

2. All quotes or proposals, for any reason whatsoever, and may readvertise for new bids or abandon the purchase;

F. Quotes or Proposals – None Received. If no quotes or proposals are received the purchase may be made through negotiated contract or other process approved by the finance director.

G. Contract Award. Subject to the approval of the city manager, contracts shall be awarded by the purchasing authority to the quote or proposal which represents the best value to the city as defined in Section 3.16.040, except as follows:

1. If two or more quotes or proposals received are for the same total amount or unit price, quality and service being equal, and if the discretion of the purchasing authority the public interest will not permit the delay of readvertising for quotes or proposals, then the purchasing authority may accept the one he or she chooses or the lowest quote or proposal obtained through subsequent negotiation with tied submitters.

2. Exceptions. The quotation procedure under this section may be dispensed with for purchases greater than twenty-five thousand dollars where supplies and equipment are purchased through cooperative purchasing arrangements with the state or other group of multiple governmental entities.3. Sellers, vendors, suppliers, and contractors who maintain places of business located within the limit of the city shall be given preference, if quality, price, service, and all other factors are equal.

The basis upon which the award is made shall be in writing.

I. Insurance. Insurance requirements will be provided via purchase order terms and conditions, or request for proposal terms and conditions information, or city contract. (Ord. 972 § 1, 2012)

3.16.085 – Alternative Bid Procedures for Public Projects

Public projects, as defined by the Uniform Public Construction Cost Accounting Act, Section 22000 et seq., of the Public Contract Code, may be let to contract alternative bidding procedures, in a manner consistent with the applicable dollar thresholds, as set forth in Section 22032 of the Public

Contract Code, as may be amended from time to time and as set forth in Section 3.16.090 and 3.16.095.

3.16.090 Public Projects – Informal Bid Procedures

Where a public project is to be performed, and is eligible to utilize the informal bidding provisions of subsection (b) of Section 22032 of the Public Contract Code, as may be amended from time to time, the following procedures shall apply:

(a) A notice inviting abbreviated bids shall be mailed or emailed to all contractors for the category of work to be bid, as shown on the list developed in accordance with Section 4.04.071, and to all construction trade journals as specified by the California Uniform Construction Cost Accounting Commission in accordance with Section 22036 of the Public Contract Code, unless the product or service is proprietary. Additional contractors and/or construction trade journals may be notified at the discretion of the department soliciting bids; provided however:

(1) If there is no list of qualified contractors maintained by the city for the particular category of work performed, the notice inviting bids shall be sent only to the construction trade journals specified by the commission.

(2) If the product or service is proprietary in nature such that it can be obtained only from a certain contractor or contractors, the notice inviting abbreviated bids may be sent exclusively to such contractor or contractors.

(b) All mailing of notices to contractors and construction trade journals pursuant to subsection (a) shall be completed not less than ten calendar days before bids are due.

(c) The notice inviting informal bids shall describe the project in general terms and how to obtain more detailed information about the project and state the time and place for the submission of bids.

(d) For public projects that are under seventy-five thousand dollars and have followed these informal bidding procedures, the city manager may award the contract.

(e) If all bids received are in excess of two hundred thousand dollars, or the limits established by subsection (d) of Section 22034 of the Public Contract Code, whichever is higher, the city council, by adoption of a resolution by a four-fifths vote, may award the contract, at no more than two hundred twelve thousand five hundred dollars, or the limit established by subsection (d) of Section 22034 of the Public Contract Code, whichever is higher, to the lowest responsible bidder, if it determines the cost estimate was reasonable.

3.16.095 Public Projects – Formal Bid Procedures

Contracts for public projects as defined by the Uniform Public Construction Cost Accounting Act, Section 22000 et seq., of the Public Contract Code, in an amount exceeding the current limit as

specified in subsection (c) of Section 22032 of the Public Contract Code, as may be amended from time to time, shall be accomplished using the formal bidding procedure described in this section.

(a) Notice Inviting Bids. Notices inviting bids shall distinctly describe the project, shall state where bid blanks and specifications may be secured, and shall state the time and place for the receiving and opening of sealed bids.

(1) Published Notice. Notice inviting bids shall be published at least fourteen calendar days before the date of opening the bids in a newspaper of general circulation, printed, and published in the city.

(2) Construction Trade Journals. The notice inviting formal bids shall also be mailed, and emailed to all construction trade journals, and posted on the city's website, or other website used for bidding on public projects, as specified by the California Uniform Construction Cost Accounting Commission in accordance with the requirements of Section 22036 of the Public Contract Code.

(b) Bidder's Security. All bids presented in connection with the public project shall be accompanied by bidder's security in the form and amount prescribed by Public Contract Code Section 20170 et seq., which security shall be dealt with as prescribed therein. In all cases bidders shall be entitled to return of bid security provided that a successful bidder shall forfeit his or her bid security upon refusal or failure to execute the contract within ten days after the notice of award of contract has been mailed unless the city is responsible for the delay. The city council may, on refusal or failure of the successful bidder to execute the contract, award it to the next lowest responsible bidder. If the city council awards the contract to the next lowest bidder, the amount of the lowest bidder's security shall be applied by the city to the difference between the low bid and the second lowest bid, and the surplus, if any, shall be returned to the lowest bidder.

(c) Bid Opening Procedure. Sealed bids shall be submitted to the department identified in the invitation for bid documents and shall be identified as bids on the envelope. Bids shall be opened in public at the time and place stated in the public notice. A tabulation of all bids received shall be open for public inspection during regular business hours for a period of not less than thirty calendar days after the bid opening.

(d) Rejection of Bids or No Bids Received. In its discretion, the city council may reject any and all bids presented and readvertise for bids. If no bids are received, the city council may award the project by negotiated contract.

(e) Award of Contracts. Contracts shall be awarded by the city council to the lowest responsible bidder except as otherwise provided herein.

(f) Tie Bids. If two or more bids received are for the same amount or unit price, quality and service being equal, and if the public interest will not permit the delay of readvertising for bids, the city council may accept the one it chooses or accept the lowest bid made by negotiation with the tie bidders or may utilize a public drawing.

(g) Performance Bonds. The department head shall have authority to require a performance bond before entering into a contract in such amount as he or she finds reasonably necessary to

protect the best interests of the city. If the department head requires a performance bond, the form and amount of the bond shall be described in the notice inviting bids.

3.16.100 Federal Award ProjectsFederal Procurement: Any procurement made pursuant to a federal award or subject to reimbursement, in whole or in part, with federal funds must comply with the City's procurement procedures, state law, and the applicable Federal Procurement Requirements, including 2 CFR § 200.322 ("Procurement of recovered materials"), 2 CFR § 200.323 ("Contract cost and price"), 2 CFR § 200.324 ("Federal awarding agency or passthrough entity review"), 2 CFR § 200.325 ("Bonding requirements"), and 2 CFR § 200.326 ("Contract provisions"). In the event of any conflict between City, state, or federal requirements, the most stringent requirement must be used. (See 2 CFR § 200.318.) City employees must comply with funding agency requests for review of technical specifications or procurement documents as provided in 2 CFR § 200.324.

ADMINISTRATIVE POLICY

Number: III-4
Issued: August 29, 2002
Revised: 3/9/06
7/26/12
10/27/16
9/14/23
Jurisdiction: City Council

PURCHASING & PROCUREMENT POLICY

PURPOSE

To establish policies and procedures to establish efficient procedure, secure supplies, services and equipment at the lowest possible cost, maintain financial control over purchases, define authority in the purchasing system, and assure quality of purchases.

POLICY

The Purchasing and Procurement Policy has been developed in order to achieve the following objectives:

A. Establish authority, responsibility, and accountability for purchasing activities conducted on behalf of the City.

B. Ensure competition and impartiality in all purchasing transactions to the maximum extent possible.

C. Standardize procedures where appropriate to ensure that City-wide policies and goals are achieved.

D. Maintain department responsibility, initiative, and flexibility in evaluating, selecting, and purchasing goods and services.

E. Implement simple yet effective internal control procedures that appropriately support planning, maximize productive use of public funds, and protect City assets from unauthorized use.

F. Communicate City-wide purchasing goals, policies and procedures to departmental staff involved in purchasing activities.

G. Decentralize decision-making to the maximum extent possible consistent with prudent review and internal control procedures.

AUTHORITY

The City's purchasing ordinance delegates purchasing authority to the City Manager, as well as any other representatives designated by the City Manager. The maximum purchasing authority level of the City Manager is defined in Section 3.16.050 of the Capitola Municipal Code as $50,000; with the exception of single capital equipment purchases that do not exceed $75,000 and are approved in the budget.

Each year, the City Manager will approve purchasing authority levels on an Expenditure Authorization Form. The delegated purchasing levels shall not exceed the City Manger's purchasing authority.

The City Manager also has the authority to approve individual changes orders up $50,000. If cumulative change orders exceed $50,000, or 10% of the original contract amount, they must be approved by City Council.

RESPONSIBILITY

The City maintains a decentralized purchasing system; and Department Heads are responsible for distributing, advertising, collecting and evaluating all procurement activities conducted within their Departments with Finance Department assistance.

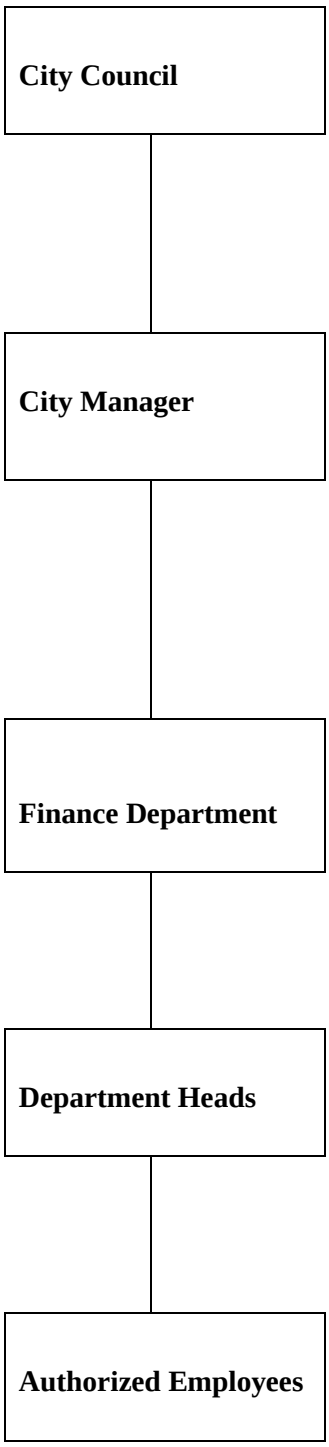
A. Employees – Each employee is responsible for following these practices. Violation of this policy may result in disciplinary action, termination of employment, or criminal prosecution.

B. Department Heads – Department Heads are responsible for ensuring that all employees of their department who conduct purchasing activities possess a thorough understanding of these standards of ethical conduct and prohibited practices.

C. City Manager – The City Manager is responsible for ensuring that all Department Heads who conduct purchasing activities possess a thorough understanding of these standards of ethical conduct and prohibited practices.

Additional purchasing responsibilities are outlined in the chart presented below:

Purchasing System Responsibilities



Purchasing Policies and Ordinance

- Adopts Purchasing Ordinance
- Approves Purchasing and Procurement Policy
-
- Delegates authority to award contracts to the City Manager
- Awards contracts if they exceed the budgeted amount

Purchasing Policies, Ordinances, and Resolutions

- Implements purchasing policies
- Delegates purchasing authority
- Awards major contracts
- Approves Bids/RFP's
  (Contingent upon Council approval in the budget)
- Approves single Capital Equipment purchases up to $75,000
  (Contingent upon Council approval in the budget)

Administrative Policies and Procedures

- Develops and implements purchasing guidelines
- Monitors and evaluates system performance
- Maintains financial project files for Capital Project over $50,000
- Sets payment schedule
- Approves authorized purchase orders up to $50,000
- Assists departments with purchasing needs

Organization Wide Procedures

- Develops and implements departmental purchasing procedures
- Delegates department purchasing authority
- Approves major departmental purchases

Department Procedures

- Purchases, receives, and pays for goods and services in accordance with the City and departmental guidelines
- Prepares necessary bid documents
- Maintains required purchasing records
- Manages department inventories

PURCHASING STANDARDS OF CONDUCT

Every employee or official engaged in purchasing activities on behalf of the City is required to employ the following standards of conduct:

- Consider the interests of the City first, in all transactions
- Carry-out established policies of the City
- Seek to obtain the maximum value for each expenditure of public funds
- Inspect materials, supplies and equipment delivered to determine their conformance with the specifications set forth in the order or contract
- Maintain confidentiality of information furnished by vendors and/or contractors regarding price, terms, performance specifications, or other data prior to a bid opening. All information that is presented during the public bid opening will be made available after the award.

The following practices are specifically prohibited in performing purchasing activities on behalf of the City:

- Having a financial or personal beneficial interest (directly or indirectly) in any contract or purchase
- Accepting or receiving (directly or indirectly) from any person, firm, or corporation to who any contract or purchase order may be awarded any money or anything of value, or promise or obligation or contract for future reward or compensation. Inexpensive advertising items bearing the name of the firm - such as pencils, pens, paperweights, or calendars - are not considered articles of value or gifts in relation to the policy
- Using position or status in the City to solicit (directly or indirectly) business of any kind; or to purchase products at special discounts or upon special concessions for private use from any person or firm who sells or solicits sales to the City.
- Dividing purchases with the intent to circumvent the purchasing authority levels

DELEGATION OF CONTRACTING AUTHORITY

A. The City Council retains all contracting authority not specifically delegated in this Policy. This Policy shall supersede all ordinances, resolutions and policies related to the City's procurement system adopted prior to adoption of this Policy. In the event of an inconsistency between this Policy and any prior ordinances, resolutions or policies of the City Council, this Policy shall control.

B. Any delegation of contracting authority contained in this Policy shall only be exercised (a) in accordance with state law, City ordinances and adopted City policies, as applicable, and (b) only if adequate funds have been included in the approved City Budget for the applicable year or otherwise appropriated by the City Council.

CITY ATTORNEY CONTRACT REVIEW

The City Attorney shall approve all contracts, including amendments to contracts, as to form and legality prior to the execution of the contract by the authorized City official. The City Attorney's approval shall be evidenced by his or her signature on the contract. City Attorney approval on change orders to public projects is not required, but may be requested, at the discretion of the City Manager or Department Head.

LOCAL VENDOR PREFERENCE

Departments are encouraged to do business with Capitola-based businesses due to the benefit to the community and the advantages in timing and availability. This preference should be given whenever it is legal, economical, and results in competitive product or service. Purchasers will actively seek to identify local vendors interested and able to conduct business with the City of Capitola. It is important that purchasers include in their inquiry or invitation to bid, the opportunity for vendors to identify themselves as local and to provide necessary supporting evidence (see definition of local vendor).

Bids, quotes, or offers submitted by Capitola-based vendors will be credited with the current local (City) sales tax and local (City) transactions & use tax in effect. This net bid will be used to compare bids. In the event of a tie, bids submitted by Capitola vendors will be given preference.

A. Purchasing goods and services from local vendors is desired because it stimulates the local economy and recognizes that our local vendors are valued members of our community. If factors such as quality, previous performance, and availability are equal among vendors, a vendor whose business is located within the City limits shall be awarded a contract if their quote or bid is within 5% of the low bid.

B. Local preference does not apply to public projects, purchases procured under federal or state requirements, or cooperative purchases with other agencies.

C. The vendor must have a valid City business license and employ at least one full-time employee located at a City business address.

D. Local bidders must bid with the same specification as required of non-local bidders.

ALTERNATIVE FUEL VEHICLES

Vehicles powered by clean alternative fuels as defined by the Energy Policy Act of 1992 and other energy efficient advanced technology vehicles shall be given consideration when purchasing new and replacement fleet vehicles

TERMINOLOGY

Best Value (Lowest Responsible Bidder): Best value is largely based on cost; however, the following factors could be considered in awarding a contract: Skills of the contractor, ability to provide supplies or services; timely processing; and compliance with governing statutes. The complete definition of best value is provided in Section 3.16.040 (A) of the Municipal Code.

Bid: Formal process to obtain lowest responsive responsible bidder or price for materials, supplies and services, and equipment

Consultant or Professional Services: Services of an attorney, engineer, doctor, financial consultant, planning or environmental consultant, investment advisor, bank or trustee office, or other professional

Contract: A written agreement between two or more persons setting forth a matter of performance and compensation or consideration given for the performance. The term contract includes, but is not limited to; purchase orders, contract for services, an addendum or change order or a letter agreement.

Local Business (Local vendor/Capitola-based business): Any business which has a retail outlet within city limits of the City of Capitola and holds the required licenses and permits for conducting its business within the City.

Maintenance: Routine, recurring, and usual work for the preservation or protection of any publicly owned or publicly operated facility for its intended purposes. It also includes minor painting, resurfacing of streets less than one inch; and landscape maintenance. This definition is provided in Section 22002 (c) of the Public Contract Code and should be contrasted with Public Project.

Open Market Purchases: Purchases of supplies, equipment, and general services from $5,000 - $25,000.

Over the Counter or Informal Purchases: Purchases under $5,000 made by authorized personnel.

Petty Cash: Cash used to reimburse authorized purchases up to $80. All reimbursements must be accompanied by a receipt.

Public Project: Construction, reconstruction, erection, alteration, renovation, improvement, demolition, and repair work involving any publicly owned, leased, or operated facility. This can also include the painting or repainting of publicly owned, leased, or operated facility. This definition is provided in Section 22002 (c) of the Public Contract Code and should be contrasted with the definition of Maintenance.

Purchase Order: A document used to acknowledge acceptable of a bid quotation or offer, and a contractual relationship is established upon its issuance and acceptance by the vendor.

Request for Proposal (RFP): An offer in to provide materials, supplies or services where the City selects vendor/consultant usually based upon criteria specified in Request for Proposal such as competence, qualifications and expertise in the field. Price is not the sole basis for selection, but may be considered in the criteria for evaluating proposals. Typically used for consultant or professional service contracts.

General Services: Any work performed or services rendered by an independent contractor, with or without the furnishing of materials such as a professional consultant.

Sole Source: Sole source purchases are used where no secondary source is reasonably available precluding the use of a competitive process.

ENCUMBRANCE OF FUNDS

A. Except in cases of emergency, or by order of the City Council, purchase orders shall not be issued unless there exists an unencumbered appropriation in the department budget against which the purchase order is to be charged.

B. Purchase orders do not roll over from one fiscal year to the next if unused, except for contract and professional services procured by an approved contract with terms that cross fiscal years. All other purchase orders shall be used in the fiscal year they were issued. In the event a planned purchase is delayed and will not occur until the next fiscal year, a new purchase order must be requested by the Department Head in the new fiscal year. For budget purposes, expenditures for goods or services will be realized based upon the date the order/service is received.

C. Invoices shall not be coded based upon budget lines that have unused/available funds. Invoices shall be coded to the correct budget line item according to the nature of the goods or services provided. It is the responsibility of the Department Head to request budget adjustments as needed to allow for the correct coding of invoices.

UNLAWFUL PURCHASES OR CONTRACTS

If any officer or employee purchases or contracts for any goods or services contrary to the provisions of these Procedures, such purchase order or contract may be void and of no effect. The staging or splitting of the purchase of goods or procurement of services, without proper justification or to avoid the authorization limits, is prohibited.

RECORD KEEPING

Each department is responsible for maintaining its own purchasing and contracting records when formal council action was not required. ALL ORIGINAL, EXECUTED CONTRACTS MUST BE PROVIDED TO THE CITY CLERK, WHO SHALL MAINTAIN SUCH ORIGINAL EXECUTED CONTRACTS IN ACCORDANCE WITH THE CITY'S RETENTION SCHEDULE REGARDLESS OF THE REQUIRED APPROVAL LEVEL (i.e. Department Head, City Manager, City Council). Upon expiration of the term of a contract for any reason, any bids, specifications, and other pertinent data shall be retained by the department in accordance with the City's adopted document retention schedule. These are public records and available for public inspection upon request.

SHARED FOLDER

In order to ensure proper record keeping a shared folder shall be created to track all aspects of a project. A list of items to be kept electronic include: bid documents, contract, change orders, purchase

orders, invoices, and communications that impact the overall project. Each department is responsible to save a copy of their responsible aspects of the project to the shared folder. The shared folder can also include the Financial Accounting System documents.

PURCHASING SYSTEM OVERVIEW

A general overview of the City's purchasing procedures; thresholds, and responsibilities are presented in the following charts. Detailed procedures for each Purchasing Category are provided in subsequent sections of this policy:

Purchasing System Chart

Scope	Category	Features
Supplies Equipment Operating Services Maintenance Services Professional Services(1)	Less than $5,000	- No Specific requirements - Competitive bidding to be used when practical - Bid award by department
	$5,000 - $25,000	- Department solicits, and documents, at least three proposals - Public projects require noticing - Bid award by Finance via purchase order
	Greater than $25,000	- Formal Bid/RFP documents - Advertising for sealed bids/proposals - City Manager approves Bid/RFP document and the solicitation of bids/proposals - Contract award generally delegated by Council to the City Manager if within budget
Capital Equipment (Authorized in Budget) (Authorized in Budget)	$25,001 - $75,000	- Informal Bid/RFP documents - Solicit a minimum of three bids/proposals, advertise if appropriate - City Manager approves Bid/RFP document and soliciting bids/proposals - Bid awarded by Finance via purchase order
Public Projects	Alternative Bid Procedures	- Public projects, as defined by the Uniform Public Construction Cost Accounting Act, Section 22000 et seq., of the Public Contract Code, may be let to contract alternative bidding procedures, - in a manner consistent with the applicable dollar thresholds, as set forth in Section 22032 of the Public Contract Code, as may be amended - from time to time

(1) Additional information related to Professional Services/RFP's is provided in the Supplemental Information Section.

(2) The Capitola Municipal Code and this Administrative Procedure provides additional guidelines regarding emergency situations.

PURCHASING CATEGORIES AND PROCEDURES

I. General Purchases under $5,000

- Purchases under $5,000 may be made by an authorized Purchasing Designee. A Department Head, or his/her designee, is authorized to purchase goods or procure services (except professional services) for an amount of Five Thousand Dollars ($5,000) or less, if adequate funds have been appropriated by the City Council in the budget. City Council appropriation of funds is required prior to such purchase or procurement.

- No competitive process is required, but the Department Head shall endeavor to purchase goods or procure services at the lowest cost commensurate with the quality needed.

II. Open Market Purchases - Purchases between $5,000 and $25,000

The purchase of supplies, equipment, and general services of a value from $5,000 to $25,000 may be made by authorized personnel. An additional bidding requirement is outlined for purchases that are defined as a Public Project.

1. The City Manager, or his/her designee, is authorized to purchase goods or procure services for an amount more than Five Thousand Dollars ($5,000) and up to Twenty-Five Thousand Dollars ($25,000), if adequate funds have been appropriated by the City Council in the budget. City Council appropriation of funds is required prior to such purchase or procurement.

2. The department must seek three (3) oral or written quotes and document the receipt of the quotes. The vendor offering the best value, after considering any local preference, shall be selected. For the purchase of goods, if the lowest price quote is not selected, the Department Head shall document in the file the basis for the selection of the vendor.

3. A contract may be required for the purchase of goods, and a contract is required for the procurement of services. All contracts are to be in a form approved by the City Attorney. Contracts are generally not required for the routine purchase of goods, such as purchasing office supplies, tires or paper goods. However, whenever the purchase of goods involves a special or unique requirement, a contract should be entered into between the City and the vendor. When in doubt regarding whether a contract is required or advisable, consult with the City Attorney.

4. If it is reasonably anticipated by the Department Head that the annual total cost of a particular good or service would exceed $25,000 (excluding public projects), then incremental purchases of that good or service shall be pursuant to a contract approved by the City Council. The contract can be for a per service hour or per item rate but must be renewed according to the procedures set forth in this ordinance at the end of the contract term. For example, if a department normally purchases 300 tires annually at a cost exceeding $25,000 overall, which would require the department to seek (3) three oral or written quotes and the approval of the City Council if the purchase was completed all at once, then incremental purchases of 50 tires shall be pursuant to a contract specifying the per tire rate approved by the City Council. The contract shall be valid for a minimum of one (1) year and it is the responsibility of the Department Head to ensure each invoice received from the consultant is calculated at the

approved rate. The purpose of this provision is to achieve uniformity and savings in the costs associated with goods or services provided by the same contractor/vendor.

5. The staging or splitting of the purchase of goods or procurement of services, without proper justification or to avoid the authorization limits, is prohibited.

6. Amendments to a purchase order and/or contract which result in the total amount exceeding the authority of the City Manager shall require City Council approval.

III. Formal Purchases - General, services, supplies, and equipment greater than $25,00 (excluding public works projects as defined by Public Contracting Code section 22002(c)).

A. Request for Quotes/RFP's shall include, but not be limited to, the following:

1. A general description of the item(s) or services to be purchased;
2. The location where quote/RFP specifications may be secured;
3.
4. The location and deadline for submission of quote/RFP

B. Notices requesting Quotes/RFP's shall be made as follows:

1. For supplies, services, and equipment, notices inviting quotes/RFPs shall be published on the City's website.

2. The City may also give such other notice as it deems appropriate

C. Rejection of Quotes/RFP's
The purchasing authority may reject:

1. Any quote or proposal that fails to meet the bidding requirements in any respect

2. All quotes or proposals, for any reason whatsoever, and may readvertise for new bids or abandon the purchase

3. In the case of public projects, the council may, by passage of a resolution by a four-fifths vote, declare that the project can be performed more economically by employees of the City and may have the project done by force account

D. Bids/RFP's - None Received
If no bids are received the purchase may be made through negotiated contract or other process approved by the Finance Director.

E. Contract Award
Subject to the approval of the City Manager, contracts shall be awarded by the purchasing authority to the quote/proposal which represents the best value to the City as defined in Section 3.16.040, except as follows:

1. If two or more quotes/proposals received are for the same total amount or unit price, quality

and service being equal, and if the discretion of the purchasing authority the public interest will not permit the delay of readvertising for quotes/proposals, then the purchasing authority may accept the one he or she chooses or the lowest quote/proposal obtained through subsequent negotiation with tied submitters.

2. Exceptions. The quotation procedure under this section may be dispensed with for purchases greater than twenty-five thousand dollars where supplies and equipment are purchased through cooperative purchasing arrangements with the state or other group of multiple governmental entities.

3. Sellers, vendors, suppliers and contractors who maintain places of business located within the limit of the City shall be given preference, if quality, price, service, and all other factors are equal.

The basis upon which the award is made shall be in writing.

F. Insurance
Insurance requirements will be provided via Purchase Order terms and conditions, or Request for Proposal terms and conditions information, or City contract.

G. Bidding Process Questions

Any questions received to the Project Manager during the bidding process should be supplied to all plan holders with corresponding answers. If the potential bidder asks the questions verbally, then the project manager shall record the questions and answer given and provide to all plan holders.

H. Change Orders
Projects at times will require change orders. Change Orders can be approved by the City Manager for amounts not to exceed $50,000, or 10% of the original contract, whichever is larger. The change orders, once approved, will be executed by the Finance department, and finance will make corresponding Purchase Order Adjustments.

I. Project Folder
The Department will keep a project folder for contracts over $50,000. The Project Folder will include proof of the Bidding process, copy of bid proposal costs, contract, purchase order, contract amendments, and all associated costs in relations to the project. The project folder shall also have copies of prudent communications. The project folder can be kept electronically on a shared drive and shall be destroyed upon expiration of the applicable retention period as outlined in the City's retention schedule.

J. Project Closeout
Upon completion of a project, the project shall be closed out with the City Council. In the project closeout the project is accepted as complete thus releasing any and all retention. The closeout will also provide a summary of the budget and total cost of the project. If the project is over budget, then additional funds need to be identified and if the project is under budget then the reallocation of those need to be identified.

IV. <u>Capital Equipment Purchases between $25,001 - $75,000</u>
Section 3.16.050 (A)(2) of the Municipal Code provides the City Manager with the authority to approve contracts for single equipment purchases based on the following criteria:

- Single equipment purchases are not greater than $75,000
- The equipment was clearly identified and described in the budget
- City Council approves the capital equipment purchase in the budget
- The equipment description listed in the budget is consistent with the item purchased
- The final cost does not exceed the amount approved in the budget

V. Alternative Bid Procedure for Public Projects – Informal Bid Procedures

Public projects, as defined by the Uniform Public Construction Cost Accounting Act, Section 22000 et seq., of the Public Contract Code, may be let to contract alternative bidding procedures, in a manner consistent with the applicable dollar thresholds, as set forth in Section 22032 of the Public Contract Code, as may be amended from time to time.

Where a public project is to be performed, and is eligible to utilize the informal bidding provisions of subsection (b) of Section 22032 of the Public Contract Code, as may be amended from time to time, the following procedures shall apply:

(a) A notice inviting abbreviated bids shall be mailed or emailed to all contractors for the category of work to be bid, as shown on the list developed in accordance with Section 3.16.085, and to all construction trade journals as specified by the California Uniform Construction Cost Accounting Commission in accordance with Section 22036 of the Public Contract Code, unless the product or service is proprietary. Additional contractors and/or construction trade journals may be notified at the discretion of the department soliciting bids; provided however:

(1) If there is no list of qualified contractors maintained by the city for the particular category of work performed, the notice inviting bids shall be sent only to the construction trade journals specified by the commission.

(2) If the product or service is proprietary in nature such that it can be obtained only from a certain contractor or contractors, the notice inviting abbreviated bids may be sent exclusively to such contractor or contractors.

(b) All mailing of notices to contractors and construction trade journals pursuant to subsection (a) shall be completed not less than ten calendar days before bids are due.

(c) The notice inviting informal bids shall describe the project in general terms and how to obtain more detailed information about the project and state the time and place for the submission of bids.

(d) For public projects that are under seventy-five thousand dollars ($75,000) and have followed these informal bidding procedures, the city manager may award the contract.

(e) If all bids received are in excess of two hundred thousand dollars, or the limits established by subsection (d) of Section 22034 of the Public Contract Code, whichever is higher, the city council, by adoption of a resolution by a four-fifths vote, may award the contract, at no more than two hundred twelve thousand five hundred dollars, or the limit established by subsection (d) of Section 22034 of the Public Contract Code, whichever is higher, to the lowest responsible bidder, if it determines the cost estimate was reasonable.

VI. Public Projects – Formal Bid Procedures

Contracts for public projects as defined by the Uniform Public Construction Cost Accounting Act, Section 22000 et seq., of the Public Contract Code, in an amount exceeding the current limit as specified in subsection (c) of Section 22032 of the Public Contract Code, as may be amended from time to time, shall be accomplished using the formal bidding procedure described in this section.

(a) Notice Inviting Bids. Notices inviting bids shall distinctly describe the project, shall state where bid blanks and specifications may be secured, and shall state the time and place for the receiving and opening of sealed bids.

(1) Published Notice. Notice inviting bids shall be published at least fourteen calendar days before the date of opening the bids in a newspaper of general circulation, printed, and published in the city.

(2) Construction Trade Journals. The notice inviting formal bids shall also be mailed, and emailed to all construction trade journals, and posted on the city's website, or other website used for bidding on public projects, as specified by the California Uniform Construction Cost Accounting Commission in accordance with the requirements of Section 22036 of the Public Contract Code.

(b) Bidder's Security. All bids presented in connection with the public project shall be accompanied by bidder's security in the form and amount prescribed by Public Contract Code Section 20170 et seq., which security shall be dealt with as prescribed therein. In all cases bidders shall be entitled to return of bid security provided that a successful bidder shall forfeit his or her bid security upon refusal or failure to execute the contract within ten days after the notice of award of contract has been mailed unless the city is responsible for the delay. The city council may, on refusal or failure of the successful bidder to execute the contract, award it to the next lowest responsible bidder. If the city council awards the contract to the next lowest bidder, the amount of the lowest bidder's security shall be applied by the city to the difference between the low bid and the second lowest bid, and the surplus, if any, shall be returned to the lowest bidder.

(c) Bid Opening Procedure. Sealed bids shall be submitted to the department identified in the invitation for bid documents and shall be identified as bids on the envelope. Bids shall be opened in public at the time and place stated in the public notice. A tabulation of all bids received shall be open for public inspection during regular business hours for a period of not less than thirty calendar days after the bid opening.

(d) Rejection of Bids or No Bids Received. In its discretion, the city council may reject any and all bids presented and readvertise for bids. If no bids are received, the city council may award the project by negotiated contract.

(e) Award of Contracts. Contracts shall be awarded by the city council to the lowest responsible bidder except as otherwise provided herein.

(f) Tie Bids. If two or more bids received are for the same amount or unit price, quality and service being equal, and if the public interest will not permit the delay of readvertising for bids, the city council may accept the one it chooses or accept the lowest bid made by negotiation with the tie bidders or may utilize a public drawing.

(g) Performance Bonds. The department head shall have authority to require a performance bond before entering into a contract in such amount as he or she finds reasonably necessary to protect the best interests of the city. If the department head requires a performance bond, the form and amount of the bond shall be described in the notice inviting bids.

VII. Federal Award Projects

Federal Procurement: Any procurement made pursuant to a federal award or subject to reimbursement, in whole or in part, with federal funds must comply with the City's procurement procedures, state law, and the applicable Federal Procurement Requirements, including 2 CFR § 200.322 ("Procurement of recovered materials"), 2 CFR § 200.323 ("Contract cost and price"), 2 CFR § 200.324 ("Federal awarding agency or passthrough entity review"), 2 CFR § 200.325 ("Bonding requirements"), and 2 CFR § 200.326 ("Contract provisions"). In the event of any conflict between City, state, or federal requirements, the most stringent requirement must be used. (See 2 CFR § 200.318.) City employees must comply with funding agency requests for review of technical specifications or procurement documents as provided in 2 CFR § 200.324.

VIII. Emergency Procedures

An emergency is defined as an unexpected occurrence or threatened occurrence that poses a danger, requiring immediate action to prevent or mitigate the loss or impairment of life, health, property, or essential public services, or any emergency proclaimed pursuant to Municipal Code 8.08.060.

Upon approval of the City Manager or Finance Director, authorized purchasing authorities may exceed the purchasing limits of $50.000. The following procedures are applicable to emergency purchases:

- Documentation. It will be the responsibility of the requesting department to attach a copy of the written justification of the emergency signed by the City Manager to any invoices at the time the invoice is submitted to accounts payable for payment.

- Reporting. All emergency purchases of goods and services over $50,000 will be immediately reported by the department responsible for the purchase to the City Clerk for inclusion as an information item on the Agenda for the next scheduled meeting of the City Council.

  In accordance with Chapter 2.5, Section 22050(a) of the Public Contract Code, the information on emergency purchase action shall be presented to the City Council for review and determination, by a four-fifths vote, that there is a need to continue the emergency action. This must occur within seven days after the action, or at the City Council's next regularly scheduled meeting if that meeting will occur within 14 days after the action. The emergency purchase action shall be presented to the City Council at least at every subsequent regularly scheduled meeting until the action is terminated. The City Council must determine, by a four-fifth vote, that there is a need to continue the emergency action.

SUPPLEMENTAL PURCHASING INFORMATION

I. Requests for Proposals (RFP)

Request for Proposal (RFP) are typically associated with general or professional service contracts over $5,000. This document requests a firm to submit a proposal to perform the scope of work

associated with a specific project. Cost is not the sole basis for selection in an RFP, other criteria such as experience, turn-around time, and approach to work are determining factors when evaluating a proposal. Based on the estimated cost of service, the corresponding Open Market, Formal bid, or Alternative Bid procedures are applicable.

Additional information related to the development and criteria of RFP's is listed below:

A. RFP Requirements

The RFP will be specific to the project and preparation will require some general knowledge of the project. However, preparation of the RFP should not involve any work for which the proposer would normally be compensated during the project. For example, on engineering projects, free preliminary engineering in the RFP should be discouraged. The RFP should address the following:

1) Required Information: In the RFP, the consultant shall be advised of the following requirements:

    a. Standard contract requirements
    b. Selection criteria.
    c. Date and time proposal is due.
    d. The name and telephone number of the staff member responsible for the project.

2) Selection & Evaluation Criteria. Proposals will be evaluated on the basis of the evaluation factors listed in the Request for Proposal. Respondents should be ranked based on the selection criteria. As a minimum, the following criteria will be used to evaluate the RFP.

    a. Firm experience (including work and project-related references).
    b. Specific staff experience and availability (including work and project-related references).
    c. Approved methods to accomplish the work.
    d. Scope of work and schedule
    e. cost

3) Price Considerations. Although price is always a consideration in recommending awarding the final selection, prices will not be a mandatory consideration in the initial evaluation process. At the discretion of the department, a department may opt to adopt an RFP procedure with price information in a separate sealed envelope. The envelopes shall not be opened until the highest rated firm is identified based upon demonstrated competence and professional qualifications. At that time, the price information will be compared to professional qualification to ensure that the price is fair and reasonable. If a major discrepancy between highest rated firm and the others exist, that discrepancy shall be evaluated and explained before award of the work. If not satisfactorily resolved, the department may to negotiate with the next-highest-ranked firm.

II. Sole Source

1. Materials, Supplies & Equipment:

    a. Definition. Sole source purchases are used where no secondary source is reasonably available precluding the use of a competitive process. The following are examples of circumstances, which could necessitate sole source procurements:
        1) Where compatibility of equipment, accessories or replacement parts is an important consideration;
        2) Where public utility services are to be procured;
        3) Where a sole supplier's item is needed for trial use or testing;
        4) Where a used item is offered at a bargain price and subject to prior sale;
        5) Where a cooperative purchasing agreement has been developed with another public agency that used a competitive selection process.
        6) Where supply proximity is an important consideration.

2. Consultant or General Services:

    a. In the case where a consulting firm has satisfactorily performed the previous stage of a project (e.g. a pre-design), or has acquired extensive background and working knowledge, the firm may be selected for follow-up work without solicitations from other firm upon written justification and recommendation of the department head and approval by the City Manager or designee.

    b. If a firm is a highly recognized authority in a field or specialty, or has unique specific knowledge regarding the project, then the firm may be selected without other solicitations for contracts and upon written justification and recommendation of the department head and approval by the City Manager or designee.

    c. Upon those infrequent occasions when confidence in the consultant and quality of service are important.

4. Documentation: It is the responsibility of the requesting department to maintain in their files a complete, written justification of the sole source purchase approved by the City Manager

5. Authorization & Reporting: All sole source purchases of more than $50,000 are authorized by the City Council and fully disclosed in the staff agenda report. Sole source purchases between $5,000 and $50,000 are authorized by the City Manager. Sole source purchases less than $5,000 are authorized by the Department Heads.

III. Multiple Year Contracts

1. Applicability. When it is in the best interest of the City, multiple year contracts will be allowed. High vendor "startup costs" or the need for continuity may make a multiple year contract

financially or operationally advantageous to the City. Under no circumstances should a multiple year contract be used to avoid competitive procurement procedures.

2. Termination Due to Lack of Funds. All multiple year contracts should contain a clause allowing the City to terminate the contract in thirty (30) days or subsequent fiscal years due to a lack of budgeted funds.

3. Term. The term of a multiple year contract should be clearly delineated. "Open end" contracts will not be used.

4. Authority. Multiple-year contracts are subject to the same authority levels detailed above.

5. Changes. Changes to multiple-year contracts are covered under "Change Orders" below.

6. Extension. Extension of contracts requires the approval of the City Manager via City contract amendment form.

7. Addendum. Increase in dollar amounts on an agreement, which results in an aggregate total in excess of $50,000 requires approval from the City Council.

IV. City Engineer Review and Approval

In accordance with Government Code section 830.6, the City Engineer shall have authority to review and approve the plan or design of any construction work or work of improvement to public property and for contracts for construction subject to approval by the City Manager. For contracts to be awarded by the City Council, the City Engineer shall review such plans and designs and shall recommend the approval of such plan or design by the City Council as part of its award of such contract.

This policy was approved and authorized by:

_____

Jamie Goldstein, City Manager

Capitola City Council

Agenda Report

Meeting: September 28, 2023

From: Public Works Department

Subject: Completion of the Kennedy Drive Sidewalk Project

Recommended Action: 1) Accept as complete the Kennedy Drive Sidewalk Project as constructed by Diamond D Concrete; 2) authorize the City Clerk to file and record a Notice of Completion; and 3) authorize the release of the contract retention of $8,560 as prescribed in the contract.

Background: On March 23, 2023, the City Council approved the plans, specifications, and construction estimate for the Kennedy Drive Sidewalk Project and authorized advertising for construction bids with an approved budget of $214,000. Following this approval, the project was advertised, and bids were received on April 12, 2023. The low bid received was from Diamond D Concrete.

On May 5, 2023, the City Manager administratively approved a construction contract for the Kennedy Drive Sidewalk Project with Diamond D Concrete in the amount of $146,495. Three change orders were processed, in the total amount of $24,696, for modifications to irrigation, pavement markings, and reconstruction of the adjacent staircase on Park Avenue, for a total contract cost of $171,191.

Construction of the project began in May 2023 and was completed in September 2023. Staff has inspected the improvements and has determined that these improvements have been completed in accordance with the approved plans and specifications.

Fiscal Impact: The City was awarded $197,000 in Regional Transportation Improvement Program (RTIP) funding for the Kennedy Drive Sidewalk Project from the Santa Cruz County Regional Transportation Commission (SCCRTC). $8,000 was previously expended on project design. The final construction contract amount for the Kennedy Drive Sidewalk Project is $171,191. The adopted FY 2022-23 Budget included $214,00 for this project. Remaining project funds will remain in the Road Fund and be available for future projects.

Attachments:

1. Notice of Completion
2. Project Cost Summary

Report Prepared By: Jessica Kahn, Public Works Director

Reviewed By: Julia Moss, City Clerk; Samantha Zutler, City Attorney

Approved By: Jamie Goldstein, City Manager

RECORDING REQUESTED BY
AND WHEN RECORDED MAIL TO:

City of Capitola
Public Works Department
Attn: Jessica Kahn
420 Capitola Avenue
Capitola, California 95010

SPACE ABOVE THIS LINE FOR RECORDER'S USE

THIS INSTRUMENT IS BEING RECORDED FOR THE BENEFIT OF THE CITY OF CAPITOLA
NO RECORDING FEE IS REQUIRED PURSUANT TO GOVERNMENT CODE §27383

NOTICE OF COMPLETION

NOTICE IS HEREBY GIVEN that the City of Capitola, owner of the property hereinafter described, whose address is 420 Capitola Avenue, Capitola, California, has caused a work of improvements more particularly described as follows:

PROJECT NAME: Kennedy Drive Sidewalk Project

PROJECT DESCRIPTION: Curb, gutter, sidewalk and ADA/bicycle improvements to be constructed on property more particularly described as follows:

DESCRIPTION: Construction of new sidewalk and road repairs to one (1) City street (Kennedy Drive).

ADDRESS: N/A

APN: N/A

The work of the improvement was completed by:

CONTRACTOR: Diamond D Concrete

ADDRESS: 310 Kennedy Drive, Capitola CA 95010

The work of the improvements was actually completed on the 1st day of September 2023 and accepted by the City Council of said City on the 28th day of September 2023.

Signature of City Official: _____

The undersigned certifies that he is an officer of the City of Capitola, that he has read the foregoing Notice of Completion and knows the content thereof; and that the same is true of his own knowledge, except as to those matters which are therein stated on information or belief, and as to those matters that he believes to be true. I certify under penalty of perjury that the foregoing is true and correct. Executed at the City of Capitola, County of Santa Cruz, State of California.

Public Works Director: _____ Date:_____
Jessica Kahn

City of Capitola Public Works
Kennedy Drive Sidewalk
Final Cost Summary

				Diamond D		Progress Payment		Progress Payment		Progress Payment		Progress Payment	
				Cost		#1		#2		#3		#3	
ITEM NO.	BID ITEM	UNIT	QTY	UNIT PRICE	UNIT TOTAL	QTY	UNIT TOTAL	QTY	UNIT TOTAL	QTY	UNIT TOTAL	QTY	UNIT TOTAL
1	Concrete Curb & Gutter	LF	550	$87.50	$48,125	480	$42,000	70	$6,125				
2	Concrete Sidewalk	SF	2750	$23	$62,150	2400	$54,240	350	$7,910				
3	Concrete Retaining Curb 6”	LF	550	$34.98	$19,240	480	$16,791	70	$2,449				
4	Concrete Curb Ramp (Caltrans Case C)	EA	1	$8,615	$8,615			1	$8,615				
5	Relocate Catch Basin (Type GO Inlet)	EA	1	$8,365	$8,365			1	$8,365				
CO1	Additional haul & DI's	LS	1	$7,816	$7,816							1	$7,816
CO2	Temp Striping & ADA AC conform	LS	1	$8,380	$8,380							1	$8,380
CO3	Stairs	LS	1	$8,500	$8,500					1	$8,500		
				Total	$171,191.00	Total	$113,031	Total	$33,464	Total	$8,500	Total	$16,196
						5% retention	$5,651.56	5% retentic	$1,673.19	5% retentic	$425.00	5% retentic	$809.80
						Payment	$107,379.71	Payment	$31,790.54	Payment	$8,075.00	Payment	$15,386.20

Capitola City Council

Agenda Report

Meeting: September 28, 2023

From: Public Works Department

Subject: Noble Gulch Culvert Condition Assessment

Recommended Action: Authorize the City Manager to execute an agreement with V&A Consulting Engineers, Inc. for the Noble Gulch Culvert Condition Assessment in the amount of $29,950.

Background: The Noble Gulch culvert is an approximate 500-yard underground structure that channels storm water, composed of concrete box culvert, reinforced concrete pipe, and corrugated metal pipe. In March 2011, the portion of pipe under the current Lower Beach and Village Parking Lot failed. Immediately after the pipe failure, the City completed permanent repairs to the failed section of pipe. The culvert was inspected by V&A Consulting Engineers, Inc. in 2011 and 2012. In 2013, the City completed the Noble Gulch Pipeline Repair Project to stabilize the remaining section of pipe.

Discussion: Re-evaluation of the Noble Gulch Culvert is necessary to determine if the condition of the culvert has degraded since the initial assessments performed in 2011 and 2012. Staff anticipates this work will be performed in October to December of 2023.

The scope of the project includes field assessment, conducted by a 5-person crew, to document pipe condition, measure deflections, conduct pipe sounding, and evaluation of the pipe condition using standard methods. Following the field assessment, a report will be prepared to summarize the assessment methods, findings, and conclusions. The report will include photographs, data tables, and graphical representations.

The City's Administrative Policy III-4: Purchasing and Procurement Policy allows sole source consultant services in cases where a consulting firm is a highly recognized authority in a field or specialty or has unique specific knowledge regarding the project. Staff recommends executing a Professional Services Agreement with V&A Consulting Engineers, Inc.as a sole source procurement. V&A Consulting Engineers, Inc. has extensive prior knowledge of the facility and completed similar assessments in 2011 and 2012.

In 2018 the City entered into an agreement with the County of Santa Cruz to jointly do an assessment of the Noble Gulch culvert to determine its overall condition and required maintenance.

Fiscal Impact: The adopted FY 2023-24 General Fund Budget has allocated $50,000 for a Noble Gulch engineering feasibility analysis to assess the current condition and capacity of the Noble Gulch drainage system. Sufficient funds are available.

Attachments:

1. Draft Agreement
2. Sole Source Memo

Report Prepared By: Jessica Kahn, Public Works Director

Reviewed By: Julia Moss, City Clerk; Sam Zutler, City Attorney

Approved By: Jamie Goldstein, City Manager

CITY OF CAPITOLA
PROFESSIONAL SERVICES AGREEMENT
Noble Gulch Culvert Condition Assessment
V&A Consulting Engineers

THIS AGREEMENT is entered into on September 28, 2023, by and between the City of Capitola, a Municipal Corporation, hereinafter called "City" and V&A Consulting Engineers, Inc. hereinafter called "Consultant".

WHEREAS, City desires certain services described in Appendix One and Consultant is capable of providing and desires to provide these services;

NOW, THEREFORE, City and Consultant for the consideration and upon the terms and conditions hereinafter specified agree as follows:

SECTION 1
Scope of Services

The services to be performed under this Agreement are for the Noble Gulch Culvert Condition Assessment Services and further detailed in Appendix One.

SECTION 2
Duties of Consultant

All work performed by Consultant, or under its direction, shall be sufficient to satisfy the City's objectives for entering into this Agreement and shall be rendered in accordance with the generally accepted practices, and to the standards of, Consultant's profession.

Consultant shall not undertake any work beyond the scope of work set forth in Appendix One unless such additional work is approved in advance and in writing by City. The cost of such additional work shall be reimbursed to Consultant by City on the same basis as provided for in Section 4.

If, in the prosecution of the work, it is necessary to conduct field operations, security and safety of the job site will be the Consultant's responsibility excluding, nevertheless, the security and safety of any facility of City within the job site which is not under the Consultant's control.

Consultant shall meet with Jessica Kahn, Public Works Director, called “Director," or other City personnel, or third parties as necessary, on all matters connected with carrying out of Consultant's services described in Appendix One. Such meetings shall be held at the request of either party hereto. Review and City approval of completed work shall be obtained monthly, or at such intervals as may be mutually agreed upon, during the course of this work.

SECTION 3
Duties of the City

City shall make available to Consultant all data and information in the City's possession which City deems necessary to the preparation and execution of the work, and City shall actively aid and assist Consultant in obtaining such information from other agencies and individuals as necessary.

The Director may authorize a staff person to serve as his or her representative for conferring with Consultant relative to Consultant's services. City shall not control or direct the manner in which the services are to be performed. However, the work in progress hereunder shall be reviewed from time to time by City at the discretion of City or upon the request of Consultant. If the work is satisfactory, it will be approved.

If the work is not satisfactory, City will inform Consultant of the changes or revisions necessary to secure approval.

SECTION 4
Fees and Payment

Payment for the Consultant's services shall be made upon a schedule and within the limit, or limits shown, upon Appendix Two. Such payment shall be considered the full compensation for all personnel, materials, supplies, and equipment used by Consultant in carrying out the work. As per the Fee Proposal provided in Appendix One, such work will be completed at a total cost not to exceed $29,950. If Consultant is compensated on an hourly basis, Consultant shall track the number of hours Consultant, and each of Consultant's employees, has worked under this Agreement during each fiscal year (July 1 through June 30) and Consultant shall immediately notify City if the number of hours worked during any fiscal year by any of Consultant's employees reaches 900 hours. In addition, each invoice submitted by Consultant to City shall specify the number of hours to date Consultant, and each of Consultant's employees, has worked under this Agreement during the current fiscal year.

SECTION 5
Changes in Work

City may order major changes in scope or character of the work, either decreasing or increasing the scope of Consultant's services. No changes in the Scope of Work as described in Appendix One shall be made without the City's written approval. Any change requiring compensation in excess of the sum specified in Appendix Two shall be approved in advance in writing by the City.

SECTION 6
Time of Beginning and Schedule for Completion

This Agreement will become effective when signed by both parties and will terminate on the earlier of:

- The date Consultant completes the services required by this Agreement, as agreed by the City; or
- The date either party terminates the Agreement as provided below.

Work shall begin on or about October 1, 2023.

In the event that major changes are ordered or Consultant is delayed in performance of its services by circumstances beyond its control, the City will grant Consultant a reasonable adjustment in the schedule for completion provided that to do so would not frustrate the City's objective for entering into this Agreement. Consultant must submit all claims for adjustments to City within thirty calendar days of the time of occurrence of circumstances necessitating the adjustment.

SECTION 7
Termination

City shall have the right to terminate this Agreement at any time upon giving ten days written notice to Consultant. Consultant may terminate this Agreement upon written notice to City should the City fail to fulfill its duties as set forth in this Agreement. In the event of termination, City shall pay the Consultant for all services performed and accepted under this Agreement up to the date of termination.

SECTION 8
Insurance

Consultant shall procure and maintain for the duration of the contract and for 1 year thereafter, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Consultant, his agents, representatives, or employees.

Minimum Scope of Insurance

Coverage shall be at least as broad as:

1. Insurance Services Office Commercial General Liability coverage (Occurrence Form CG 0001).

2. Insurance Services office Form Number CA 0001 covering Automobile Liability, Code 1 (any auto).

3. Workers' Compensation insurance as required by the State of California, and Employer's Liability Insurance.

4. Professional (Errors and Omissions) Liability insurance appropriate to the consultant's profession. Architects' and engineers' coverage shall include contractual liability.

Minimum Limits of Insurance

Consultant shall maintain limits no less than:

1.	General Liability: (including operations, products and completed operations)	**$1,000,000** per occurrence and **$2,000,000** in aggregate (including operations, for bodily injury, personal and property damage.
2.	Automobile Liability:	**$1,000,000** per accident for bodily injury and property damage.
3.	Employer's Liability Insurance	**$1,000,000 per accident for bodily injury and property damage.**
4.	Errors and Omissions Liability: Limits	**$1,000,000** per claim and **$2,000,000** in the aggregate.

Other Insurance Provisions

The commercial general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

1. The City of Capitola, its officers, officials, employees and volunteers are to be covered as additional insured's as respects: liability arising out of work or operations performed by or on behalf of the Consultant or automobiles owned, leased, hired or borrowed by the Consultant.
2. For any claims related to this project, the Consultant's insurance coverage shall be primary insurance as respects the City, its officers, officials, employees and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees or volunteers shall be excess of the Consultant's insurance and shall not contribute with it.
3. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be canceled except after prior written notice has been given to the City.

Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the City.

Waiver of Subrogation

Contractor hereby agrees to waive rights of subrogation which any insurer of Contractor may acquire from Contractor by virtue of the payment of any loss. Contractor agrees to obtain any endorsement that may be necessary to affect this waiver of subrogation. **The Workers' Compensation policy shall be endorsed with a waiver of subrogation in favor of the City of Capitola** for all work performed by the Contractor, its employees, agents and subcontractors.

Verification of Coverage

Consultant shall furnish the City with original certificates and amendatory endorsements affecting coverage by this clause. The endorsements should be on forms provided by the City or on other than the City's forms provided those endorsements conform to City requirements. All certificates and endorsements are to be received and approved by the City before work commences. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements affecting the coverage required by these specifications at any time.

SECTION 9
Indemnification

For General Services: To the fullest extent permitted by law, Consultant agrees to indemnify, defend, and hold harmless the City, its directors, officers, employees from and against any and all claims, demands, actions, liabilities, damages, judgments, or expenses (including attorneys' fees and costs) arising from the acts or omissions of Consultant's employees or agents in any way related to the obligations or in the performance of services under this Agreement, except for design professional services as defined in Civil Code § 2782.8, and except where caused by the sole or active negligence, or willful misconduct of the City.

For Design Professional Services under Civil Code §2782.8: To the fullest extent permitted by law, Consultant agrees to indemnify, defend, and hold harmless the City, its directors, officers, and employees from and against any and all claims, demands, actions, liabilities, damages, or expenses (including attorneys' fees and costs) arising from the negligence, recklessness, or willful misconduct of the Consultant, Consultant's employees, or agents in any way related to the obligations or in the performance of design professional services under this Agreement as defined in Civil Code §2782.8, except where caused by the sole or active negligence, or willful misconduct of the City. The costs to defend charged to the Consultant relating to design professional services shall not exceed the Consultant's proportionate percentage of fault per Civil Code §2782.8.and against all claims, damages, losses, and expenses including attorney fees arising out of the performance of the work described herein, caused in whole or in part by any negligent act or omission of the Consultant, Consultant's employees, agents or subcontractors, except where caused by the active negligence, sole negligence, or willful misconduct of the City.

SECTION 10
Civil Rights Compliance/Equal Opportunity Assurance

Every supplier of materials and services and all consultants doing business with the City of Capitola shall be in compliance with the applicable provisions of the Americans with Disabilities Act of 1990, and shall be an equal opportunity employer as defined by Title VII of the Civil Rights Act of 1964 and including the California Fair Employment and Housing Act of 1980. As such, consultant shall not discriminate against any person on the basis of race, religious creed, color, national origin, ancestry, disability, medical condition, marital status, age or sex with respect to hiring, application for employment, tenure or terms and conditions of employment. Consultant agrees to abide by all of the foregoing statutes and regulations.

SECTION 11
Legal Action/Attorneys' Fees

If any action at law or in equity is brought to enforce or interpret the provisions of this Agreement, the prevailing party shall be entitled to reasonable attorney's fees in addition to any other relief to which he or she may be entitled. The laws of the State of California shall govern all matters relating to the validity, interpretation, and effect of this Agreement and any authorized or alleged changes, the performance of any of its terms, as well as the rights and obligations of Consultant and the City.

SECTION 12
Assignment

This Agreement shall not be assigned without first obtaining the express written consent of the Director after approval of the City Council.

SECTION 13
Amendments

This Agreement may not be amended in any respect except by way of a written instrument which expressly references and identifies this particular Agreement, which expressly states that its purpose is to amend this particular Agreement, and which is duly executed by the City and Consultant. Consultant acknowledges that no such amendment shall be effective until approved and authorized by the City Council, or an officer of the City when the City Council may from time to time empower an officer of the City to approve and authorize such amendments. No representative of the City is authorized to obligate the City to pay the cost or value of services beyond the scope of services set forth in Appendix Two. Such

authority is retained solely by the City Council. Unless expressly authorized by the City Council, Consultant's compensation shall be limited to that set forth in Appendix Two.

SECTION 14
Miscellaneous Provisions

1. *Project Manager*. Director reserves the right to approve the project manager assigned by Consultant to said work. No change in assignment may occur without prior written approval of the City.

2. *Consultant Service.* Consultant is employed to render professional services only and any payments made to Consultant are compensation solely for such professional services.

3. *Licensure*. Consultant warrants thereby represents that he or she has an established trade, occupation, or business in the same nature of services Consultant is performing under this Agreement. Consultant warrants that he or she has complied with any and all applicable governmental licensing requirements.

4. *Other Agreements*. This Agreement supersedes any and all other agreements, either oral or in writing, between the parties hereto with respect to the subject matter, and no other agreement, statement or promise related to the subject matter of this Agreement which is not contained in this Agreement shall be valid or binding.

5. *City Property*. Upon payment for the work performed, or portion thereof, all drawings, specifications, records, or other documents generated by Consultant pursuant to this Agreement are, and shall remain, the property of the City whether the project for which they are made is executed or not. The Consultant shall be permitted to retain copies, including reproducible copies, of drawings and specifications for information and reference in connection with the City's use and/or occupancy of the project. The drawings, specifications, records, documents, and Consultant's other work product shall not be used by the Consultant on other projects, except by agreement in writing and with appropriate compensation to the City.

6. *Consultant's Records*. Consultant shall maintain accurate accounting records and other written documentation pertaining to the costs incurred for this project. Such records and documentation shall be kept available at Consultant's office during the period of this Agreement, and after the term of this Agreement for a period of three years from the date of the final City payment for Consultant's services.

7. *Independent Contractor*. In the performance of its work, it is expressly understood that Consultant, including Consultant's agents, servants, employees, and subcontractors, is an independent contractor solely responsible for its acts and omissions, and Consultant shall not be considered an employee of the City for any purpose. Consultant expressly warrants not to represent, at any time or in any manner, that Consultant is an employee of the City.

8. *Conflicts of Interest*. Consultant stipulates that corporately or individually, its firm, its employees and subcontractors have no financial interest in either the success or failure of any project which is, or may be, dependent on the results of the Consultant's work product prepared pursuant to this Agreement.

9. *Notices*. All notices herein provided to be given, or which may be given by either party to the other, shall be deemed to have been fully given and fully received when made in writing and deposited in the United States mail, certified and postage prepaid, and addressed to the respective parties as follows:

CITY OF CAPITOLA
420 Capitola Avenue
Capitola, CA 95010
831-475-7300

V&A CONSULTING ENGINEERS
1000 Broadway, Ste. 320
Oakland, CA 94607
510-903-6600

By:_____
Benjamin Goldstein, City Manager

By:_____

Dated:_____

Dated:_____

Approved as to Form:

_____
Samantha W. Zutler, City Attorney

APPENDIX ONE
Scope of Services

1000 Broadway
Suite 320
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vaengineering.com

V&A Project No. 23-0331

September 21, 2023

Jessica Kahn, P.E.
Public Works Director
City of Capitola
420 Capitola Ave
Capitola, CA 95010

Subject: City of Capitola, Noble Gulch Culvert, Proposal for Condition Assessment Services

Dear Ms. Kahn,

Thank you for requesting a proposal for the Noble Gulch culvert assessment for the City of Capitola (City). V&A Consulting Engineers (V&A) is prepared to conduct a confined space entry walk-through to reassess the condition of the approximate 500 yard storm water culvert within the Noble Gulch in Capitola, CA. The culvert is comprised of concrete box culvert, reinforced concrete pipe, and corrugated metal pipe. The intent of this re-evaluation is to determine if the condition of the culvert has degraded further since the initial assessments performed in 2011 and 2012. In addition, the City would like to verify that construction at 419 Capitola Avenue did not cause damage to the box culvert section.

During the dry weather season, Soquel Creek backs up into the Noble Gulch due to controlled releases of the creek. It is anticipated that this work will be performed in October to December of 2023, following a rainfall event that permits Soquel Creek to release enough flow to relieve the culvert such that V&A can safely traverse the entire length of pipe within the limits of the project. It is expected that the culvert will not contain more than 6 inches of standing water during the assessment. The City will notify V&A at least one week in advance of a potential Soquel Creek release event.

Per your request, the following is our proposal and detailed scope of work for the subject services:

Scope of Work

Task | Description

1. **Project Management:** Track and execute the project in accordance with the schedule, budget, and quality expectations that are established. The project duration is assumed to be 4 months. This task includes the following project management work activities:
    a. Monitor project progress, including work completed, work remaining, budget expended, schedule, estimated cost of work remaining, and estimated cost at completion; manage activities within the total project budget.
    b. Monitor project activities for potential changes and anticipate changes whenever possible; with approval, modify project tasks, task budgets, and approach to keep the overall project within budget and on schedule.
    c. Manage the quality of all work activities and project deliverables.
2. **Preparation:**
    a. **Document Review:** Review the drawings and existing documentation for the culvert to determine the requirements for the field assessment, such as determining the access locations, and staging of safety equipment.

b. **Equipment:** Prepare equipment, including personal protective equipment, gas meters, ventilation equipment, tripod assembly, mechanical winch, and fall arrest for the field assessment.

c. **Safety Plan:** Submit a safety plan prior to the field assessment. The safety plan will document the entry approach, identify possible hazards, and provide rescue procedures for confined space entry. A draft electronic copy of the safety plan will be submitted for review. Comments will be incorporated, and a final electronic copy of the safety plan will be provided.

3. **Field Assessment:** V&A shall conduct a confined space entry for evaluation of the culvert. V&A will provide a 5-person confined space crew and necessary confined space and testing equipment as required to enter the culvert for the purpose of conducting a condition assessment. V&A will coordinate and conduct the assessment using the following methods:

   a. The entrant(s) will document the pipe condition with respect to corrosion during the walk through with digital photographs to be included in the letter report. Particular attention will be made to areas previously noted to be of concern. V&A will note visible corrosion and measure pipe deflections.

   b. Ovality measurements of the pipe to determine deflections will be measured at 100-foot intervals.

   c. Pipe sounding measurements will be made with a chipping hammer to listen for discontinuities to evaluate the presence of soil voids external to the pipe wall.

   d. Condition ratings using the VANDA™ Metallic Condition Index.

   e. The depth of sediment (if present) will be measured at 100-foot intervals.

   f. Storm drain connections will be documented. Locations of visually identified defective areas will be documented by circumferential clock position in the pipe and their location recorded by distance wheel measurement from entry points.

4. **Report**: Prepare a report that describes the field assessment methods, activities, results, and conclusions. The report will include photographs of the existing conditions, data tables, and graphical and illustrative figures, as required, to present the information gathered during this assessment. The locations and severity of defects will be noted, and the current condition of the structure regarding its state of degradation will be described. A draft electronic copy of the report will be submitted for review. Comments will be incorporated, and a final electronic copy will be provided.

Any changes to the following assumptions, prevailing wage assumption, exclusions and limitations, or proposed schedule may necessitate an adjustment to the proposed fee.

Assumptions

The following is a list of additional assumptions used to develop V&A's scope of work.

- Suitable access points are available to setup a ladder and davit arm/tripod fall-protection/retrieval system.

Prevailing Wage Assumption

V&A understands some or all tasks associated with this project are subject to prevailing wage rate requirements. All project labor subject to prevailing wage requirements will incur a 25% markup on the associated labor fee. This markup covers the higher base hourly labor rates associated with prevailing wage rates, additional premium pay requirements, and reporting requirements.

Exclusions and Limitations

The following items, unless otherwise indicated, are not included in the scope of work:

- Traffic Control Plans
- Traffic Control Measures, including but not limited to sign boards, cones, and flaggers
- Encroachment Permits
- Notification
- Bonds
- Shutdown, Dewatering, and Cleaning of Structures
- Excavations
- Structure Access, including but not limited to ladders, scaffolding, and cranes
- Supplied Air
- Vendor Portal Registration
- Payment Portal Invoice Submission

Fee Proposal

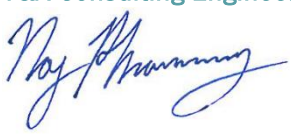
V&A proposes to complete this work on a lump sum basis at a total cost not to exceed **$29,950** with terms of net 30 days (contingent payment terms dependent on timely processing of V&A's submitted invoice). This fee is valid for 90 days from the date of this proposal. The scope of work was developed as a result of our discussions and represents our mutual understanding.

If unforeseen circumstances should arise which indicate that more work is required, V&A will provide a written estimate of additional required work and cost. V&A will not proceed with work beyond the not-to-exceed figure without a written authorization from your office.

We are prepared to begin work on your project upon receiving written approval, a notice to proceed (NTP), or a purchase order from your office.

On behalf of our staff and myself, I would like to thank you for the opportunity to be of service to you and the City of Capitola. We look forward to working with you.

Sincerely,
V&A Consulting Engineers, Inc.



Noy Phannavong, P.E.
Condition Assessment Practice Lead

Accepted: _____ Date: _____
City of Capitola

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VANDA Concrete Condition Index

V&A created the VANDA Concrete Condition Index to provide consistent reporting of corrosion damage based on objective criteria. Concrete condition is rated from Level 1 to Level 5 based upon field observations and measurements, with Level 1 indicating the best case and Level 5 indicating severe damage. The individual criteria are applied based on engineering judgment to arrive at the overall rating. The 2020 update to the VANDA Concrete Condition Index adds a fifth rating level, providing greater detail to assist in planning the rehabilitation or replacement of deteriorated assets.

Condition Rating	Description	Representative Photograph
Level 1	**Little or no damage to concrete** Hardness..... hard surface Surface profile ..... smooth, apparently intact Cracks ..... hairline width, minimal frequency Spalling ..... none Reinforcement ..... not exposed or damaged	
Level 2	**Minor surface damage** Hardness..... soft surface layer to 1/8-inch depth Surface profile ..... fine aggregate exposed Cracks ..... hairline width, moderate frequency Spalling ..... shallow spalling, minimal frequency Reinforcement ..... not exposed or damaged	
Level 3	**Moderate surface damage** Hardness..... soft surface layer to 1/4-inch depth Surface profile ..... large aggregate exposed or protruding Cracks ..... up to 1/32-inch width, moderate frequency Spalling ..... shallow spalling, minimal frequency Reinforcement ..... exposed; minor damage, minimal frequency	
Level 4	**Loss of concrete mortar and damage to reinforcement** Hardness..... soft paste beyond 1/4-inch depth Surface profile ..... large aggregate exposed, loose, or missing Cracks ..... 1/8- to 1/4-inch width, moderate frequency Spalling ..... deep spalling, moderate frequency Reinforcement ..... exposed with damage, moderate frequency	
Level 5	**Bulk loss of concrete and reinforcement** Hardness..... soft paste beyond 1-inch depth Surface profile ..... large aggregate exposed, loose, or missing Cracks ..... over 1/2-inch width, or narrower and frequent Spalling ..... deep spalling, high frequency Reinforcement ..... consumed; loss of structural integrity	

V&A

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VANDA Metal Condition Index

V&A created the VANDA Metal Condition Index to provide consistent reporting of corrosion damage based on objective criteria. Metal condition is rated from Level 1 to Level 5 based upon field observations and measurements, with Level 1 indicating the best case and Level 5 indicating severe damage. The individual criteria are applied based on engineering judgment to arrive at the overall rating. The 2020 update to the VANDA Metal Condition Index adds a fifth rating level, providing greater detail to assist in planning the rehabilitation or replacement of deteriorated assets.

Condition Rating	Description	Representative Photograph
Level 1	**Little or no corrosion** ▪ Wall thickness loss, general.....none ▪ Wall thickness loss, pitting.....none to minimal ▪ Extent (area) of corrosion.....may be widespread but superficial	
Level 2	**Minor corrosion** ▪ Wall thickness loss, general.....up to 20% ▪ Wall thickness loss, pitting.....up to 20% ▪ Extent (area) of corrosion.....localized	
Level 3	**Moderate corrosion** ▪ Wall thickness loss, general.....20% to 40% ▪ Wall thickness loss, pitting.....20% to 60% ▪ Extent (area) of corrosion.....up to half of surface	
Level 4	**Severe corrosion** ▪ Wall thickness loss, general.....40% to 60% ▪ Wall thickness loss, pitting.....60% to 100% (pinholes) ▪ Extent (area) of corrosion.....most of surface	
Level 5	**Failure or imminent failure** ▪ Wall thickness loss, general.....greater than 60% ▪ Wall thickness loss, pitting.....100% (holes) ▪ Extent (area) of corrosion.....most or all of surface	

APPENDIX TWO
Fees and Payments

For the services performed, City will pay consultant on a not-to-exceed, lump sum basis upon satisfactory completion of the services and delivery of work products. Payments will be issued monthly as charges accrue.

Consultant hereby represents and warrants, based upon Consultant's independent determination of the time and labor, which will be required to perform said services, that Consultant will provide all said services at a cost which will not exceed the maximum price set forth in this agreement for Consultant's services. Consultant hereby assumes the risk that Consultant will perform said services within this maximum price constraint and Consultant acknowledges that its inability to do so shall not excuse completion of the services and shall not provide a basis for additional compensation.

Expenses may include travel, meals and lodging while traveling, materials other than normal office supplies, reproduction and printing costs, equipment rental, computer services, service of subconsultants or subcontractors, and other identifiable job expenses. The use of Consultant's vehicles for travel shall be paid at the current Internal Revenue Service published mileage rate.

In no event shall the total fee charged for the scope of work set forth in Appendix One exceed the total budget of $29,950 (Twenty Nine Thousand, Nine Hundred and Fifty Dollars and Zero Cents), without specific, written advance authorization from the City.

Payments shall be made monthly by the City, based on itemized invoices from the Consultant which list a brief description of the services performed, the date the services were performed, the hours spent and by whom, and a brief description of the actual costs and expenses incurred. Except as specifically authorized by City, Consultant shall not bill City for duplicate services performed by more than one person. Such payments shall be for the invoice amount. The monthly statements shall contain the following affidavit signed by a principal of the Consultant's firm:

"I hereby certify as principal of the firm of V& Consulting Engineers, Inc., that the charge of $29,950 as summarized above and shown in detail on the attachments is fair and reasonable, is in accordance with the terms of the Agreement dated September 28, 2023, and has not been previously paid."

Sole Source Purchases Determination
V & A CONSULTING ENGINEERS
September 28, 2023

1BACKGROUND: The City of Capitola Purchasing and Procurement policy (Administrative Policy III-4) requires three telephone quotes, whenever feasible for purchases between $5,000 - $25,000. The Policy also requires a formal RFP bid procedure for purchases over $25,000. The policy provides conditions for Sole Source (Section II) purchases that are exempt from the competitive process.

DISCUSSION: The contract with **V & A Consulting Engineers**, in the amount of **$29,950**, dated **September 21, 2023** is a qualified sole source purchase within the City Administrative Policy III-4 Section II **(check one of the following)**

Materials, Supplies & Equipment:

_____ (a) Definition. Sole source purchases are used where no secondary source is reasonably available precluding the use of a competitive process.

Consultant or General Services:

__X___ (a.) In the case where a consulting firm has satisfactorily performed the previous stage of a project (e.g. a pre-design), or has acquired extensive background and working knowledge, the firm may be selected for follow- up work without solicitations from other firm upon written justification and recommendation of the department head and approval by the City Manager or designee.

_____ (b.) If a firm is a highly recognized authority in a field or specialty, or has unique specific knowledge regarding the project, then the firm may be selected without other solicitations for contracts and upon written justification and recommendation of the department head and approval by the City Manager or designee.

_____ (c.) Upon those infrequent occasions when confidence in the consultant and quality of service are important.

V & A Consulting Engineers has completed two previous surveys of the Noble Gulch Pipeline and will be able to use this data for comparative purposes.

Dept Head _____ 9/22/23 Date

City Manager _____ 9/22/23 Date

Capitola City Council

Agenda Report

Meeting: September 28, 2023

From: City Manager Department

Subject: Universally Accessible Playground at Jade Street Park Naming

Recommended Action: Select a playground name for the Universally Accessible Playground at Jade Street Park.

Background: On June 8, 2023, the City Council reviewed the conceptual design for a Universally Accessible Playground at Jade Street Park and approved a partnership with the County Park Friends (Friends) for a fundraising campaign. Also during that meeting, the City Council approved a strategy proposed by the Friends' that community involvement be sought in determining a name for the UA playground at Jade Street Park. This plan included soliciting name suggestions from the community, with the City Council choosing the playground name from a top three list in the fall.

On July 27, 2023, the City Council approved the final concept for the playground and adopted Administrative Policy V-19, dictating sponsorship opportunities for elements within the playground and overall donor recognition.

Discussion: The Friends received 70 name submissions between June 9 and August 30, and formed a six-member committee comprised of Friends representatives, City staff along with community representatives to review submissions. On September 5th and 12th, the committee met to discuss naming options and unanimously agreed to recommend the following three possible playground names:

- Jewel Box Playground at Jade Street Park
- Lighthouse Landing at Jade Street Park
- Treasure Cove at Jade Street Park

Each name submission was reviewed and considered against the following criteria: Marketability, distinction, and ease of use (would a child use these words, is the name easy to say out loud, etc.); significance to the Capitola community; and alignment to the playground's marine/shoreline theme.

Fiscal Impact: None.

Report Prepared By: Chloé Woodmansee, Assistant to the City Manager

Reviewed By: Julia Moss, City Clerk

Approved By: Jamie Goldstein, City Manager

Universally Accessible Playground at Jade Street Park

September 28, 2023

Background

June 8: reviewed conceptual playground design and approved partnership with Friends of Santa Cruz County Parks for fundraising

July 27: approved final conceptual playground design and Admin Policy V-19


landscape structures
Jade St. Park
1174169-01-02-03 • 06.08.2023
©2023 Landscape Structures

Playground Naming

Between June 9 and August 30, seventy name submissions received

6-person committee met to review and choose top three, using following criteria:

1) marketability/distinction/easy to say
2) significance to Capitola community
3) alignment with playground's shoreline theme

drum roll, please…

Top 3 Choices

Jewel Box Playground at Jade Street Park

Lighthouse Landing at Jade Street Park

Treasure Cove at Jade Street Park

Recommendation

Select a playground name for Universally Accessible Playground at Jade Street Park

Capitola City Council

Agenda Report

Meeting: September 28, 2023

From: Public Works Department

Subject: Bay Avenue and Hill Street Traffic Safety

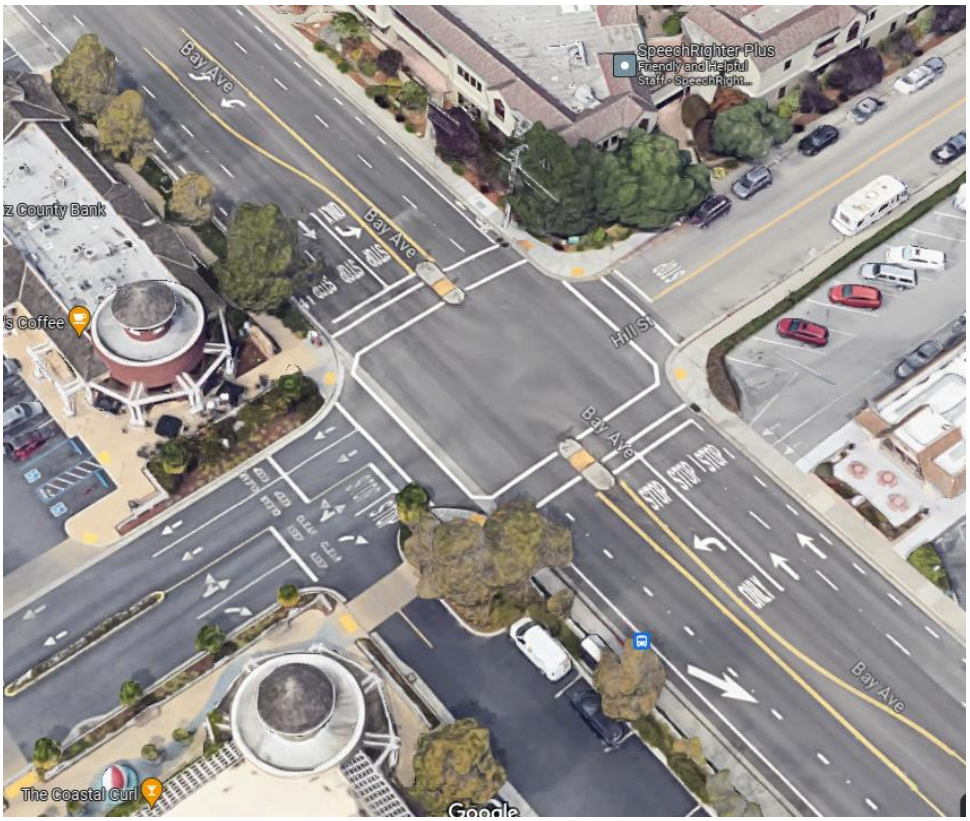
Recommended Action: Provide direction to staff regarding short-term and long-term options for improving traffic safety at the intersection of Bay Avenue and Hill Street.

Background: The Bay Avenue/Hill Street intersection is an all-way stop controlled intersection that provides connectivity to Highway 1 and the Capitola Village. The section of Bay Avenue at this location is a four-lane wide roadway with a center left turn lane. The City has received community feedback regarding concerns about pedestrian safety at the crosswalks. During peak hours, the intersection experiences congestion from heavy vehicle and pedestrian cross traffic due to access to the Nob Hill Plaza, the Rispin bridge crossing, and the surrounding residential and commercial land uses. The adopted FY 2023/24 budget includes $50,000 to make improvements to this intersection.

There are currently nine lane approaches at the Bay Avenue/Hill Street intersection (Figure 1). This includes three lanes on Bay Avenue for both northbound and southbound traffic, one lane on Hill Street for westbound traffic, and two lanes from the Nob Hill Driveway for eastbound traffic. Additionally, there is a pedestrian crosswalk with a raised median and contrasting pavement, as well as Class II bike lanes on Bay Avenue.

The primary concern at this intersection is the high number of lanes, combined with the presence of pedestrian crossings and bike lanes, can make it challenging for drivers to effectively navigate the stop-controlled intersection.

Figure 1. Existing Bay/Hill Intersection Layout



There were a total of 16 accidents at the Bay Avenue/Hill Street intersection between November 2017 and August 2023. The most common collision occurred from broadside crashes between two vehicles making improper turns at the intersection (six). All but one of the reported collisions involved two vehicles, and the collision severity ranged from property damage to injuries. Two pedestrian-involved collisions occurred in December of 2022 and August 2023, due to vehicles failing to yield for a pedestrian in the crosswalk. The Police Department issues an average of 22 citations per year in/near this intersection.

The City Council allocated $50,000 to the “Bay Avenue/Hill Street Pilot Project” in the Fiscal Year 2023-24 Budget. Following City Council direction, this report is being presented to identify areas in this intersection where traffic, pedestrian, and bicycle concerns have been identified and to provide potential short- and long-term options to address these concerns for the City Council’s consideration.

Discussion: The City contracted with Kimley Horn to perform an evaluation of the traffic operations and feasible intersection improvements at Bay Avenue/Hill Street that could improve traffic operations and safety for vehicles, bicyclists, and pedestrians (Attachment 1). This analysis considered level of service (LOS), vehicle queue lengths, and bike and pedestrian access. LOS is a measure of how well the intersection functions from a traffic flow perspective during typical peak traffic periods.

The Bay Avenue/Hill Street intersection currently operates at LOS C during the AM, Midday, and PM peaks with the existing all-way stop baseline geometry. Pursuant to the City’s General Plan, LOS C is identified as the minimum LOS operational standard generally and LOS D as the minimum acceptable standard at signalized and unsignalized intersections within the Village Area, along Bay Avenue, and along 41st Avenue.

“Queue length” is the space needed for cars to stack while waiting to complete a turn. This length should be long enough to accommodate all turning vehicles so that traffic doesn't back up into through-traffic lanes.

Bike and pedestrian access is generally improved in intersections with increased visibility, separated spaces, and when crossing distances are minimized.

Four alternatives were evaluated for the Bay Avenue / Hill Street intersection, and are summarized in Table 1:

1. Convert the intersection into signal control: This alternative involves installing traffic signals at the intersection to regulate the flow of vehicles, pedestrians, and cyclists. Signal control can help improve traffic operations and enhance safety by providing clear right-of-way instructions to all users.
2. Convert the intersection into a single lane roundabout layout with yield control: This alternative includes replacing the existing intersection with a roundabout, which would feature a circular roadway with yield control at entry points. Roundabouts are known for their traffic calming effects, improved safety, and efficient traffic flow.
3. Convert Bay Avenue into a 2-lane roadway with a road diet transition: This alternative proposes reducing the number of lanes on Bay Avenue to create a 2-lane roadway. This road diet transition aims to improve traffic operations and safety by reallocating space for other uses, such as bike lanes, wider sidewalks, or landscaped areas.
4. Maintain the existing all-way stop control: This alternative keeps the current configuration of the intersection with the all-way stop control.

Table 1. Intersection Improvement Alternatives

	Signal	Roundabout	Road Diet	Comments
LOS	🟡	🟢	🔴	Roundabout (LOS A) and signal (LOS B) have less delay than AWSC (LOS B/C) or the Road Diet worst movement (LOS F).
Queueing	🔴	🟢	🟡	Each option will experience queuing during peak hours.
Collision Severity	🔴	🟢	🟡	Collision severity is typically reduced by the low-speed, low-angle of collision of a roundabout.
Collision Frequency	🔴	🟢	🟡	Single-lane roundabouts typically decrease collisions. Signals typically increase collisions.
Pedestrian Mobility	🟢	🟢	🟡	The roundabout provides more pedestrian islands, and allows pedestrians to cross one lane of traffic at a time.
Pedestrian Safety	🟡	🟢	🟡	The roundabout lowers speeds and number of conflicts. Road diet has narrower crossings and slower speeds.
ROW Acquisition	🟢	🟡	🟢	More land maybe required with the roundabout option.
Network Connectivity	🟢	🟢	🟢	All maintain good network connectivity.
Construction $	🟡	🟡	🟢	Higher roadway area and landscaping costs with a roundabout; higher costs with signal due to electrical improvements. Signal and roundabout costs estimated at $450,000; Road diet permanent improvements estimated at approximately $200,000
Maintenance $	🔴	🟡	🟡	Potential for landscaping maintenance at roundabout and at road diet approach islands
Aesthetics	🔴	🟢	🟢	Roundabout has opportunities for landscaping center island features. Road diet allows approach islands.
Emergency Response	🟢	🟢	🟢	All options provide good mobility for emergency response vehicles.
GHG emissions	🔴	🟢	🟡	Installing roundabouts in place of traffic signals or stop signs has been found to significantly reduce CO2 and other air pollution emissions.
	Better		**Worse**	
	🟢	🟡	🔴	

From an intersection operations perspective, Alternative 2 (roundabout) would offer the best LOS and vehicle queuing results. This alternative would accommodate improved multi-modal access for bikes, pedestrians, and vehicles. However, it should be noted that substantial intersection and construction improvements would be necessary to convert the intersection into a roundabout, making it a more

complex and time-consuming project. However, a roundabout at this location would not require utility relocation, which is often the most time-consuming aspect of these projects.

Alternative 1, the signal configuration, would also provide acceptable LOS and vehicle queuing operations while offering improved multi-modal access for bikes and pedestrians. It is worth noting that while the LOS would be “improved” with a signal-controlled intersection, the typical delay for a vehicle to traverse the intersection would actually increase as compared to the other options.

Alternative 3, the road diet configuration, would result in the worst LOS operation, based on traditional traffic modeling, but would provide improved bike and pedestrian access through a 2-lane road diet and raised pedestrian crossing features. It is worth noting that City staff, have speculated that a traditional traffic model may overestimate the actual effect of implementing a road diet through this intersection as the sheer number of conflicting movements in the current intersection appear to create notable driver confusion, which can lead to lower levels of service.

Considering the community's primary concern for safety and the desire for near-term action, Staff recommends moving forward with a "quick build" project based on Alternative 3. Quick-build projects are reversible and adjustable traffic safety improvements that can be installed relatively quickly. They typically utilize cost-efficient and readily available materials such as paint, cones, barriers, and signage. These projects can create safer lanes for pedestrians, cyclists, and other road users. Unlike major capital projects, quick-build projects can be implemented within weeks or months and are intended to be evaluated and reviewed within the initial 24 months of construction.

Figure 2. Examples of a “Quick-Build” Intersection Project

Upon direction from the City Council, staff proposes conducting public outreach on the proposed intersection modifications in early 2024. This outreach would provide an opportunity for the community to provide input, ask questions, and express any concerns regarding the project. To minimize disruption, staff recommends scheduling the construction for late spring, avoiding the school year.

Fiscal Impact: Estimated cost to complete Alternative 3 is within the allocated $50,000 budget in the FY 2023-24 budget. This quick build project would be temporary in nature, and there would be a budget

allocation in the FY 2024-25 budget to analyze its effectiveness and either remove or permanentize the improvements.

If the City Council directs staff to pursue Alternative 1 (signalization), the installation of signals would cost around $450,000. There would be additional costs for bike and pedestrian accommodations. Operating a signal typically costs around $5,000 annually.

If the City Council directs staff to pursue Alternative 2 (roundabout), the estimated cost would be similar to the traffic signal. This is because significant modifications to the intersection geometry would be required, along with extensive public outreach and additional traffic studies. However, there are significant sources of external funding available for roundabouts due to their GHG reductions, which staff could pursue should Council direct staff to proceed with this alternative.

Attachments:

1. Bay Avenue / Hill Street – Intersection Operations Analysis
2. Concept Layout - Alterative 2 Roundabout
3. Concept Layout - Alterative 3 Road Diet

Report Prepared By: Jessica Kahn, Public Works Director

Reviewed By: Julia Moss, City Clerk

Approved By: Jamie Goldstein, City Manager

TECHNICAL MEMORANDUM

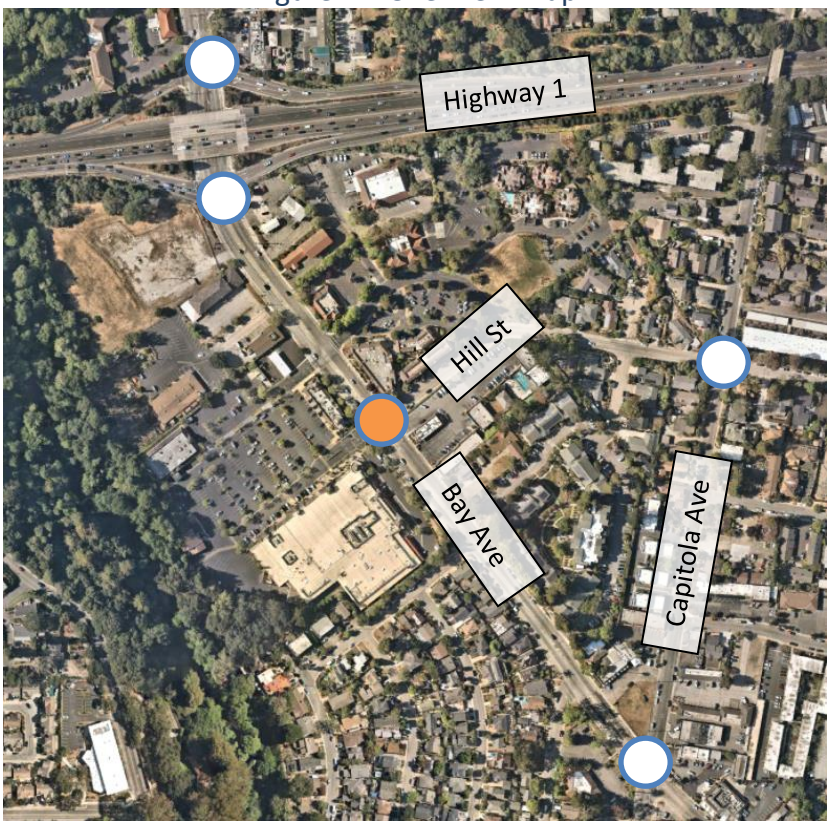
To:	Kailash Mozumder and Jessica Kahn, City of Capitola
From:	Derek Wu P.E. and Frederik Venter P.E., Kimley-Horn and Associates, Inc.
Date:	September 22, 2023
Re:	**Bay Avenue / Hill Street – Intersection Operations Analysis**

1. Introduction

Kimley-Horn and Associates, Inc. (Kimley-Horn) is working with the City of Capitola (City) to evaluate the traffic operations at the intersection of Bay Avenue and Hill Street. The Bay Avenue / Hill Street intersection is an existing all-way stop controlled intersection that provides connectivity to Highway 1 and the Capitola Village. The section of Bay Avenue at this location is a four-lane wide roadway with a center left turn lane, and there have been community concerns of limited pedestrian visibility and safety at the crosswalks. During the peak hour, the intersection experiences congestion from heavy vehicle and pedestrian cross traffic due to access to the Nob Hill Plaza, the Rispin bridge crossing, and the surrounding residential and commercial land uses.

The City is investigating feasible intersection improvements at Bay Avenue / Hill Street that could improve traffic operations and safety for vehicles, bicyclists, and pedestrians. These potential intersection improvements may include physical changes to the roadway geometry, signalization, and/or signing/striping. **Figure 1** presents an overview map of the project study intersections along the Bay Avenue corridor

Figure 1 – Overview Map



2. Data Collection and Intersection Conditions:

This section describes the various analysis scenarios and traffic data used to analyze the study intersection.

Year 2022 (Existing) Study Scenario

Year 2022 existing turning movement counts during the 7-9 AM peak, 2-4 PM Midday peak, and 4-6 PM peak hours at the project study intersections were collected by All Traffic Data Service. These traffic counts were collected on 2/15/2022 and 9/13/2022 when school was in session and during favorable weather conditions. The collected traffic volume data is provided in **Table 1** and **Attachment A**.

Table 1: Bay/Hill Intersection Traffic Volumes

Peak Hour		Vehicle Traffic Volume by Direction and Movement												
		Bay Avenue						Hill Street						
		NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	TOTAL
AM	8:00-9:00	59	392	12	86	329	29	51	17	30	7	38	134	1184
Mid	14:30-15:30	60	402	23	124	458	53	75	45	68	15	25	104	1452
PM	16:00-17:00	89	290	14	154	438	52	89	44	79	23	45	86	1403

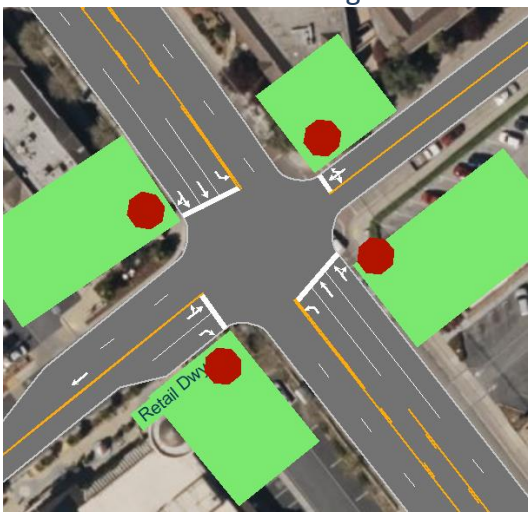
Peak Hour		Bike & Pedestrian Crossing Traffic Volume by Direction				
		Bay Avenue		Hill Street		
		NB Leg	SB Leg	EB Leg	WB Leg	TOTAL
AM	8:00-9:00	7	3	14	7	31
Mid	14:30-15:30	24	8	9	10	51
PM	16:00-17:00	17	14	8	10	49

Existing Intersection Layout

The Bay Avenue / Hill Street all-way stop controlled intersection currently operates with the following lane geometry as shown in **Figure 2**:

- Bay Avenue Major Approach (Northbound and Southbound directions)
  - 1 left turn lane, 1 through lane, 1 shared through-right lane
  - Class II bike lane striped along the curb
  - Santa Cruz Metro bus stop in southwest corner
  - Pedestrian crosswalk with raised median and contrasting pavement
- Hill Street Minor Approach (Westbound direction)
  - 1 shared left-through-right lane
- Nob Hill Driveway Minor Approach (Eastbound direction)
  - 1 shared left-through lane, 1 right turn lane
  - 2 receiving vehicle lanes into commercial plaza driveway

Figure 2 – Existing Bay/Hill Intersection Layout



SWITRS Collision Data

Collision data from 2017 to 2022 along Bay Avenue was also obtained using the State Integrated Traffic Records System (SWITRS) database. SWITRS is a tool which California Highway Patrol (CHP) staff and members of its Allied Agencies throughout California can request various types of statistical collision reports in an electronic format. **Table 2** and **Attachment A** summarizes the reported traffic collisions at the Bay/Hill intersection.

Table 2: Bay/Hill Collision Data (2017 to 2022)

Date Range	November 2017 to 2022	Primary Collision Factors	Collision Severity
Vehicle Collision Type			
Head-On	1	Other	PDO
Sideswipe	4	Improper Turn, Auto R/W	PDO
Rear End	1	Unsafe Speed	PDO
Broadside	6	Improper Turn, Auto R/W, Unsafe Speed	Injury, PDO
Hit Object	1	Improper Turn	PDO
Overturned	0		
Auto/Ped	0		
Other	0		
Total # Collisions	**13**		

Between November 2017 and November 2022, there were 13 reported collisions at the Bay Avenue / Hill Street intersection. The most common collision was 6 broadside crashes between two vehicles making improper turns at the intersection. All the reported collisions involved two vehicle parties and the collision severity ranged from property damage only to injuries.

Capitola Police Department Collision Data

The City of Capitola provided supplemental collision data for pedestrian and bicycle collisions from the Capitola Police Department (PD) in addition to the SWITRS data. Between 2017 and 2023, there were 3

collisions between vehicles and pedestrians and 0 collisions between vehicles and bicycles at the Bay/Hill intersection. See **Attachment A** for the detailed data.

3. Traffic Operations and Intersection Level of Service Analysis

Methodology

The Transportation Research Board's Highway Capacity Manual (HCM) Sixth Edition, Synchro 11, and Sidra 9 traffic analysis software were used to perform an operational analysis of the study intersection. The results of the HCM operational analysis are commonly described using a grading system called level of service, or LOS. LOS is a description of intersection operating conditions, ranging from LOS A (free flow traffic conditions with little or no delay) to LOS F (oversaturated conditions where traffic flows exceed design capacity, resulting in long queues and delays).

Per the City of Capitola General Plan, LOS C is identified as the minimum level of service operational standard The City also accepts LOS D as the minimum acceptable standard at signalized and unsignalized intersections within the Village Area, along Bay Avenue, and along 41st Avenue. Therefore, LOS D was the threshold applied to the Bay/Hill intersection.

Proposed Bay/Hill Intersection Alternatives

The intersection operations analysis investigated potential improvements that could improve access and safety for vehicles, bicycles, and pedestrians. The following lane intersection improvement and lane configuration alternatives were evaluated under the Year 2022 study scenario:

- **Alternative 1 - Signal**
  - Convert intersection into signal control
  - Lane geometry as described in Section 2 for all intersection leg approaches
    - Permissive yield left turn operations for Eastbound and Westbound approaches
    - Protected left turn operations for Northbound and Southbound approaches
  - Assumes signal equipment can fit within existing City intersection footprint and right-of-way, no physical improvements needed

- **Alternative 2 - Roundabout**
  - Convert intersection into single lane roundabout layout with yield control
    - 84-ft inscribed circle diameter intersection
    - 44-ft diameter center island with raised apron for heavy vehicle turns
    - Raised splitter islands at each approach leg for 2-stage pedestrian crossing
    - 10-ft wide Class I shared bike/ped pathway
  - Assumes roundabout improvements can fit within existing City intersection footprint and right-of-way
  - Bay Avenue Major Approach (Northbound and Southbound directions)
    - 1 shared left-through-right lane
    - Lane drop transition prior to roundabout intersection
    - Bike lane transitions and curb ramps onto Class I shared bike/ped pathway prior to roundabout intersection
    - Santa Cruz Metro bus stop and commercial driveway access is maintained along Bay Avenue corridor
  - Hill Street Minor Approach (Westbound direction)

        - 1 shared left-through-right lane
        - Pedestrian crossing relocated before roundabout intersection
    - Nob Hill Driveway Minor Approach (Eastbound direction)
        - 1 shared left-through-right lane
        - Pedestrian crossing and pathway relocated inside plaza parking lot before roundabout intersection

- **Alternative 3 –All Way Stop Control with Road Diet**
    - Convert Bay Avenue into a 2-lane roadway with road diet transition and striping between Crossroads Loop and Center Street
    - Install curb bulb-outs and raised intersection crossings at the Bay/Hill intersection
    - Assumes improvements can fit within existing City intersection footprint and right-of-way
    - Bay Avenue Major Approach (Northbound and Southbound directions)
        - 1 left turn lane, 1 shared through-right lane
        - Lane drop transition prior to all-way stop intersection
        - Raised speed table and pedestrian crosswalk at stop bar
    - Hill Street Minor Approach (Westbound direction)
        - 1 shared left-through-right lane
    - Nob Hill Driveway Minor Approach (Eastbound direction)
        - 1 shared left-through lane, 1 right turn lane

- **Alternative 4 – Existing Baseline All Way Stop Control**
    - Lane geometry as described in Section 2
    - Control scenario for traffic operation comparison with proposed alternatives

Figures detailing the general operations and dimensions of the Alternative 1, 2, and 3 concept design layouts are included in **Attachment B**.

Year 2022 Existing Conditions LOS

Table 3 provides an intersection LOS comparison between the signal, roundabout, and all way stop control configurations for the AM, Midday, and PM peak hour under Year 2022 existing conditions. The LOS calculations with Synchro and Sidra software are included in **Attachment C**.

Table 3: Bay/Hill Intersection LOS Summary

AM Peak Hour Intersection Operations								
Alternative	Control Type	HCM 6th Ed Criteria	Overall Intersection	Hill Street		Bay Avenue		Notes
				EB	WB	NB	SB	
1 Signal	Signal	Delay (s)	**11.2**	10.4	12	11.3	11	Existing lane geometry
		LOS	**B**	B	B	B	B	
2 Roundabout	Yield	Delay (s)	**7.6**	5.7	7.9	8.2	7.3	1-lane approach geometry
		LOS	**A**	A	A	A	A	
3 AWSC Road Diet	Stop	Delay (s)	**24.8**	12.4	15.4	31.9	23.8	1-lane approach geometry
		LOS	**C**	B	C	D	C	
4 Baseline AWSC	Stop	Delay (s)	**16.1**	13.1	16	17.4	15.4	Existing lane geometry
		LOS	**C**	B	C	C	C	

Midday Peak Hour Intersection Operations								
Alternative	Control Type	HCM 6th Ed Criteria	Overall Intersection	Hill Street		Bay Avenue		Notes
				EB	WB	NB	SB	
1 Signal	Signal	Delay (s)	**12.2**	10.9	11.5	12.4	12.5	Existing lane geometry
		LOS	**B**	B	B	B	B	
2 Roundabout	Yield	Delay (s)	**9.5**	9	7.3	9.9	9.9	1-lane approach geometry
		LOS	**A**	A	A	A	A	
3 AWSC Road Diet	Stop	Delay (s)	**55.3**	14.6	16.3	47.9	87.9	1-lane approach geometry
		LOS	**F**	B	C	E	F	
4 Baseline AWSC	Stop	Delay (s)	**21.8**	16.2	17.6	22.3	24.1	Existing lane geometry
		LOS	**C**	C	C	C	C	

PM Peak Hour Intersection Operations								
Alternative	Control Type	HCM 6th Ed Criteria	Overall Intersection	Hill Street		Bay Avenue		Notes
				EB	WB	NB	SB	
1 Signal	Signal	Delay (s)	**12.1**	11	11.4	12	12.6	Existing lane geometry
		LOS	**B**	B	B	B	B	
2 Roundabout	Yield	Delay (s)	**8.6**	8.5	6.1	7.8	9.8	1-lane approach geometry
		LOS	**A**	A	A	A	A	
3 AWSC Road Diet	Stop	Delay (s)	**26.8**	13.5	14.8	18.5	39.1	1-lane approach geometry
		LOS	**D**	B	B	C	E	
4 Baseline AWSC	Stop	Delay (s)	**16.3**	14.6	15.7	15	17.7	Existing lane geometry
		LOS	**C**	B	C	B	C	

As shown above, the Bay/Hill intersection currently operates at acceptable LOS C during the AM, Midday, and PM peak with the Alternative 4 all-way stop baseline geometry. With the Alternative 1 signal layout, the intersection is anticipated to operate at LOS B during the AM, Midday, and PM peak. The Alternative 2 roundabout layout would operate at LOS A during the AM, Midday, and PM peak. With the Alternative 3 all-way stop road diet layout, the intersection would operate at LOS C during the AM peak, LOS F during the Midday peak, and LOS D during the PM peak.

Compared to the baseline all-way stop configuration, the Alternative 1 signal and Alternative 2 roundabout options would operate with better LOS and reduced overall intersection delay for all the

peak periods. Of these options, the roundabout would yield the best LOS results with the shortest overall intersection delay at 7.6 seconds, 9.5 seconds, and 8.6 seconds for the respective AM, Midday, and PM peaks.

The Alternative 3 all-way stop road diet option would operate with worse LOS and would exceed the City's acceptable LOS D threshold for traffic operations during the Midday peak. This increase in intersection delay is because the Bay Avenue northbound and southbound approaches are the critical intersection movements, and the reduction of travel lanes with the 2-lane road diet plus stop control increases overall vehicle delay along Bay Avenue.

4. Intersection Queuing Analysis

A queuing analysis was also performed along the Bay Avenue roadway corridor to determine the queuing effect for each of the alternative layouts. The SimTraffic software associated with Synchro 11 was used to simulate the signal, roundabout, and all way stop control lane configurations at the Bay/Hill intersection during the peak hour period. This micro-simulation was conducted to obtain the 95th percentile vehicle queue on each approach during the AM, Midday, and PM peak hour period. The results of the 95th percentile queues observed in the analysis for the Year 2022 Existing conditions are summarized in **Table 4**. Vehicle queuing calculations are included in **Attachment D**.

Table 4: Bay/Hill Intersection Queuing Analysis Summary

AM Peak Hour Vehicle Queues								
Alternative	Control Type	Criteria	Approach Queue (ft)					
			Hill Street		Bay Avenue			
			EB	WB	NBL	NBT	SBL	SBT
1 Signal	Signal	Average 95% Queue	78	84	61	72	74	175
		Approach Storage Length	95	348	100	340	100	160
		Storage Delta	17	264	39	268	26	-15
		Sufficient Storage?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**
2 Roundabout	Yield	Average 95% Queue	49	65	79	79	82	82
		Approach Storage Length	95	348	340	340	160	160
		Storage Delta	46	283	261	261	78	78
		Sufficient Storage?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
3 AWSC Road Diet	Stop	Average 95% Queue	54	63	59	116	77	131
		Approach Storage Length	95	348	100	340	100	160
		Storage Delta	41	285	41	224	23	29
		Sufficient Storage?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
4 Baseline AWSC	Stop	Average 95% Queue	54	74	43	62	81	108
		Approach Storage Length	95	348	100	340	100	160
		Storage Delta	41	274	57	278	19	52
		Sufficient Storage?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Note: Approach storage length based on existing turn pocket length or distance from next intersection

Midday Peak Hour Vehicle Queues								
Alternative	Control Type	Criteria	Approach Queue (ft)					
			Hill Street		Bay Avenue			
			EB	WB	NBL	NBT	SBL	SBT
1 Signal	Signal	Average 95% Queue	98	76	71	100	97	250
		Approach Storage Length	95	348	100	340	100	160
		Storage Delta	-3	272	29	240	3	-90
		Sufficient Storage?	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**No**
2 Roundabout	Yield	Average 95% Queue	87	57	97	97	150	150
		Approach Storage Length	95	348	340	340	160	160
		Storage Delta	8	291	243	243	10	10
		Sufficient Storage?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
3 AWSC Road Diet	Stop	Average 95% Queue	78	78	71	157	100	238
		Approach Storage Length	95	348	100	340	100	160
		Storage Delta	17	270	29	183	0	-78
		Sufficient Storage?	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**
4 Baseline AWSC	Stop	Average 95% Queue	76	61	44	83	98	191
		Approach Storage Length	95	348	100	340	100	160
		Storage Delta	19	287	56	257	2	-31
		Sufficient Storage?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**

Note: Approach storage length based on existing turn pocket length or distance from next intersection

PM Peak Hour Vehicle Queues								
Alternative	Control Type	Criteria	Approach Queue (ft)					
			Hill Street		Bay Avenue			
			EB	WB	NBL	NBT	SBL	SBT
1 Signal	Signal	Average 95% Queue	90	89	73	84	92	204
		Approach Storage Length	95	348	100	340	100	160
		Storage Delta	5	259	27	256	8	-44
		Sufficient Storage?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**
2 Roundabout	Yield	Average 95% Queue	67	56	82	82	206	206
		Approach Storage Length	95	348	340	340	160	160
		Storage Delta	28	292	258	258	-46	-46
		Sufficient Storage?	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**
3 AWSC Road Diet	Stop	Average 95% Queue	74	74	55	74	95	267
		Approach Storage Length	95	348	100	340	100	160
		Storage Delta	21	274	45	266	5	-107
		Sufficient Storage?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**
4 Baseline AWSC	Stop	Average 95% Queue	74	72	47	67	98	237
		Approach Storage Length	95	348	100	340	100	160
		Storage Delta	21	276	53	273	2	-77
		Sufficient Storage?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**

Note: Approach storage length based on existing turn pocket length or distance from next intersection

For Alternative 1 - Signal, the average 95th percentile queues are anticipated to exceed the existing available storage length between adjacent intersections for the following approaches:

- Southbound Through – AM, Midday, and PM peak
- Eastbound – Midday peak

For Alternative 2 - Roundabout, the average 95th percentile queues are anticipated to exceed the existing available storage length between adjacent intersections for the following approaches:

- Southbound Left –PM peak
- Southbound Through – PM peak

For Alternative 3 – Road Diet, the average 95th percentile queues are anticipated to exceed the existing available storage length between adjacent intersections for the following approaches:

- Southbound Left –Midday peak
- Southbound Through – Midday and PM peak

For the Baseline AWSC Geometry, the average 95th percentile queues are anticipated to exceed the existing available storage length between adjacent intersections for the following approaches:

- Southbound Through – Midday and PM peak

Overall, for the Year 2022 scenario, Alternative 2 would provide the most optimal intersection configuration to accommodate the anticipated peak hour vehicle queues.

It should be noted that for all intersection options, the existing storage length for the Bay Avenue southbound approach is approximately 160-feet long between Hill Street and Crossroads Loop and does not accommodate the anticipated peak hour vehicle queues. The Crossroads Loop / Bay Avenue intersection is stop controlled on the minor approaches and the 95th percentile peak hour queues on Bay Avenue are anticipated to encroach into the intersection. To prevent vehicle queues from blocking access at the Crossroads Loop, the intersection area should be augmented with “Keep Clear” striping on Bay Avenue.

5. Bike and Pedestrian Access Comparison

Table 5 compares the bicycle and pedestrian access features between the proposed intersection alternatives. Overall, the Alternative 2 roundabout geometry would provide the shortest pedestrian crossings and enhance bicycle access through the intersection compared to the other configurations. The Alternative 3 road diet geometry would also enhance bike and pedestrian access due to the shorter crossing distances and raised crosswalks in the northbound and southbound legs.

Table 5: Bay/Hill Intersection Bike and Pedestrian Summary

Alternative	Control Type	Bike Features	Pedestrian Features	Crosswalk Exposure In Roadway (ft)			
				Hill Street		Bay Avenue	
				EB	WB	NB	SB
1 Signal	Signal	Striped Class II bike lane	Red contrasting pavement; Median refuge on NB & SB legs; 6' Sidewalk Ped signal crossing phase	42	38	64	64
2 Roundabout	Yield	Striped Class II bike lane; Bike ramp transitions between Class I shared pathway	Red contrasting pavement; Median refuge on NB, SB, EB, WB legs; 10' Class I shared pathway; Separated crossings from intersection	36	28	30	30
3 AWSC Road Diet	Stop	Striped Class II bike lane with 2' buffers	Red contrasting pavement; Curb extensions on NB & SB legs; 6' Sidewalk Raised speed table and crossings on NB & SB legs	42	30	48	48
4 Baseline AWSC	Stop	Striped Class II bike lane	Red contrasting pavement; Raised median refuge on NB & SB legs' 6' Sidewalk	42	38	64	64

6. Conclusions and Recommendations

From an intersection operations perspective, the Alternative 2 roundabout configuration would yield the best LOS and vehicle queuing results to accommodate improved multi-modal access for bikes, pedestrians, and vehicles. For Alternative 2 to be feasible, substantial intersection and construction improvements would be required to convert the intersection into a roundabout.

The Alternative 1 signal configuration would also yield acceptable LOS and vehicle queuing operations, and the signal would be a feasible alternative to provide improved multi-modal access for bikes and pedestrians. The Alternative 3 road diet configuration would yield the worst LOS and queueing operations, but the 2-lane road diet and raised pedestrian crossing features would provide improved bike and pedestrian access.

7. Appendix

- Attachment A – Traffic Count Data and SWITRS/Capitola PD Collision Data
- Attachment B – Intersection Alternative Concept Layouts
- Attachment C – Synchro and Sidra LOS Results
- Attachment D – Synchro Queuing Results

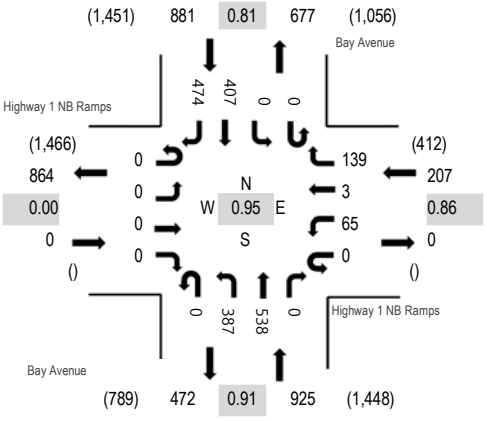
Attachment A –Traffic Count Data and SWITRS/Capitola PD Collision Data

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 Bay Avenue & Highway 1 NB Ramps AM
Date: Tuesday, February 15, 2022
Study Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes in Study Peak Hour: 08:15 AM - 08:30 AM

Study Peak Hour (for all study intersections)

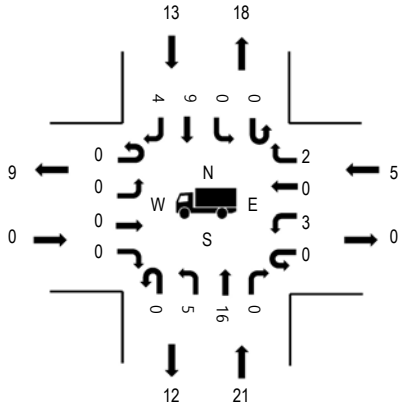
Motorized Vehicles



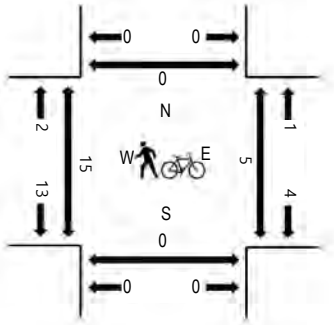
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	2.4%	0.86
NB	2.3%	0.91
SB	1.5%	0.81
All	1.9%	0.95

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Highway 1 NB Ramps Eastbound				Highway 1 NB Ramps Westbound				Bay Avenue Northbound				Bay Avenue Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	0	0	0	20	1	32	0	57	19	0	0	0	44	49	222	1,360
7:15 AM	0	0	0	0	0	18	1	34	0	64	41	0	0	0	46	66	270	1,630
7:30 AM	0	0	0	0	0	20	0	40	0	75	88	0	0	0	72	96	391	1,890
7:45 AM	0	0	0	0	0	13	2	30	0	108	127	0	0	0	91	106	477	2,013
8:00 AM	0	0	0	0	0	18	0	38	0	79	174	0	0	0	81	102	492	1,951
8:15 AM	0	0	0	0	0	12	1	33	0	96	115	0	0	0	133	140	530	
8:30 AM	0	0	0	0	0	22	0	38	0	104	122	0	0	0	102	126	514	
8:45 AM	0	0	0	0	0	18	2	19	0	73	106	0	0	0	79	118	415	
Count Total	0	0	0	0	0	141	7	264	0	656	792	0	0	0	648	803	3,311	
Peak Hour	0	0	0	0	0	65	3	139	0	387	538	0	0	0	407	474	2,013	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	3	1	0	4	7:00 AM	0	0	0	0	0	7:00 AM	0	0	4	0	4
7:15 AM	0	1	1	4	6	7:15 AM	0	0	0	0	0	7:15 AM	1	0	1	0	2
7:30 AM	0	2	2	0	4	7:30 AM	0	0	0	0	0	7:30 AM	1	0	0	0	1
7:45 AM	0	7	1	6	14	7:45 AM	0	1	0	0	1	7:45 AM	1	0	1	0	2
8:00 AM	0	1	2	2	5	8:00 AM	0	2	0	10	12	8:00 AM	3	0	3	0	6
8:15 AM	0	5	2	3	10	8:15 AM	0	3	0	2	5	8:15 AM	8	0	1	0	9
8:30 AM	0	8	0	2	10	8:30 AM	0	1	0	3	4	8:30 AM	3	0	0	0	3
8:45 AM	0	4	1	3	8	8:45 AM	0	1	0	1	2	8:45 AM	2	0	3	0	5
Count Total	0	31	10	20	61	Count Total	0	8	0	16	24	Count Total	19	0	13	0	32
Peak Hour	0	21	5	13	39	Peak Hour	0	7	0	15	22	Peak Hour	15	0	5	0	20

ALL TRAFFIC DATA SERVICES
(303) 216-2439
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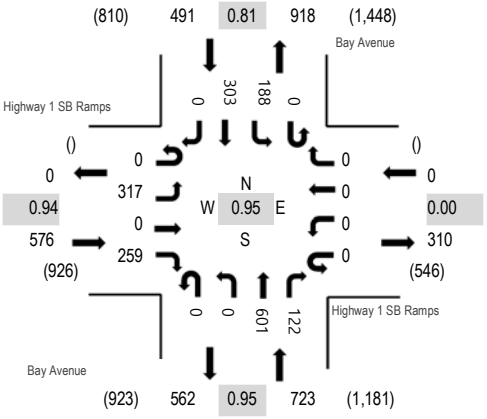
Location: 2 Bay Avenue & Highway 1 SB Ramps AM
Date: Tuesday, February 15, 2022
Study Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes in Study Peak Hour: 08:15 AM - 08:30 AM

Study Peak Hour (for all study intersections)

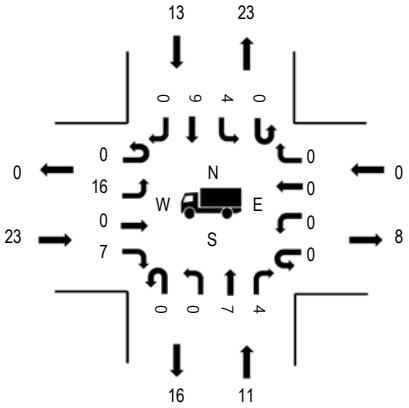
Motorized Vehicles



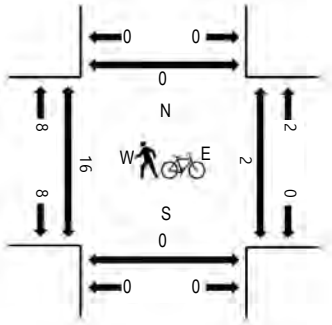
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.0%	0.94
WB	0.0%	0.00
NB	1.5%	0.95
SB	2.6%	0.81
All	2.6%	0.95

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Highway 1 SB Ramps Eastbound				Highway 1 SB Ramps Westbound				Bay Avenue Northbound				Bay Avenue Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	13	0	36	0	0	0	0	0	0	64	17	0	23	40	0	193	1,186
7:15 AM	0	27	0	38	0	0	0	0	0	0	73	25	0	29	34	0	226	1,442
7:30 AM	0	53	0	48	0	0	0	0	0	0	118	27	0	42	51	0	339	1,687
7:45 AM	0	84	0	60	0	0	0	0	0	0	149	30	0	58	47	0	428	1,790
8:00 AM	0	92	0	61	0	0	0	0	0	0	164	27	0	34	71	0	449	1,731
8:15 AM	0	69	0	78	0	0	0	0	0	0	138	34	0	47	105	0	471	
8:30 AM	0	72	0	60	0	0	0	0	0	0	150	31	0	49	80	0	442	
8:45 AM	0	73	0	62	0	0	0	0	0	0	108	26	1	47	52	0	369	
Count Total	0	483	0	443	0	0	0	0	0	0	964	217	1	329	480	0	2,917	
Peak Hour	0	317	0	259	0	0	0	0	0	0	601	122	0	188	303	0	1,790	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

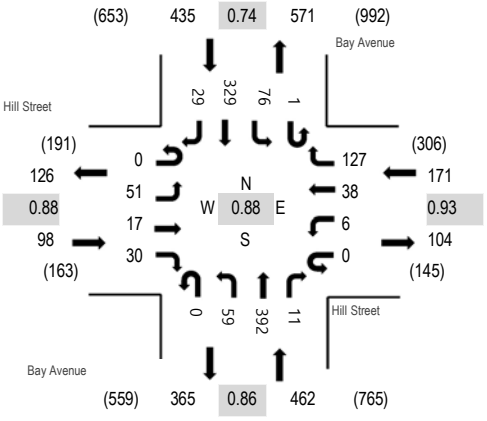
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	5	0	0	1	6	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:15 AM	1	0	0	3	4	7:15 AM	0	0	0	0	0	7:15 AM	1	0	0	0	1
7:30 AM	2	1	0	0	3	7:30 AM	0	0	0	0	0	7:30 AM	3	0	0	0	3
7:45 AM	8	3	0	3	14	7:45 AM	0	1	0	0	1	7:45 AM	4	0	0	0	4
8:00 AM	2	2	0	2	6	8:00 AM	0	2	0	7	9	8:00 AM	5	0	1	0	6
8:15 AM	5	3	0	6	14	8:15 AM	0	2	0	3	5	8:15 AM	5	0	0	0	5
8:30 AM	8	3	0	2	13	8:30 AM	0	0	0	2	2	8:30 AM	2	0	1	0	3
8:45 AM	4	4	0	4	12	8:45 AM	0	1	0	1	2	8:45 AM	3	0	2	0	5
Count Total	35	16	0	21	72	Count Total	0	6	0	13	19	Count Total	23	0	4	0	27
Peak Hour	23	11	0	13	47	Peak Hour	0	5	0	12	17	Peak Hour	16	0	2	0	18

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 Bay Avenue & Hill Street AM
Date: Tuesday, February 15, 2022
Study Peak Hour: 08:00 AM - 09:00 AM
Peak 15-Minutes in Study Peak Hour: 08:15 AM - 08:30 AM

Study Peak Hour (for all study intersections)

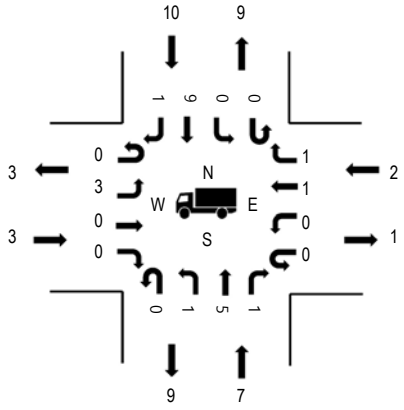
Motorized Vehicles



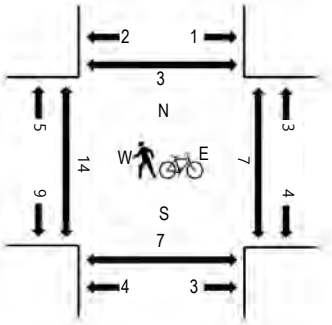
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	3.1%	0.88
WB	1.2%	0.93
NB	1.5%	0.86
SB	2.3%	0.74
All	1.9%	0.88

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Hill Street Eastbound				Hill Street Westbound				Bay Avenue Northbound				Bay Avenue Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	13	4	5	0	1	6	20	0	8	40	0	0	5	22	5	129	721
7:15 AM	0	7	3	3	0	1	2	21	0	3	42	1	0	9	35	5	132	882
7:30 AM	0	7	1	6	0	0	3	40	0	10	92	1	0	2	58	4	224	1,081
7:45 AM	0	7	3	6	0	2	4	35	0	8	97	1	0	11	55	7	236	1,156
8:00 AM	0	10	3	6	0	1	10	35	0	12	110	1	1	19	79	3	290	1,166
8:15 AM	0	17	4	7	0	1	8	37	0	14	95	2	0	22	119	5	331	
8:30 AM	0	13	4	7	0	0	12	25	0	12	118	4	0	20	75	9	299	
8:45 AM	0	11	6	10	0	4	8	30	0	21	69	4	0	15	56	12	246	
Count Total	0	85	28	50	0	10	53	243	0	88	663	14	1	103	499	50	1,887	
Peak Hour	0	51	17	30	0	6	38	127	0	59	392	11	1	76	329	29	1,166	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

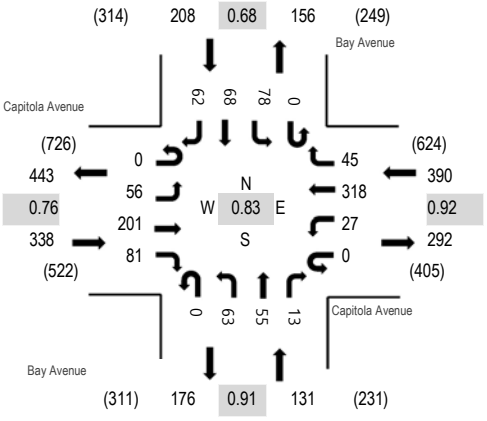
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	2	2	7:00 AM	0	0	0	0	0	7:00 AM	0	1	1	1	3
7:15 AM	0	0	0	3	3	7:15 AM	0	0	0	0	0	7:15 AM	0	1	1	1	3
7:30 AM	0	2	0	2	4	7:30 AM	0	0	1	0	1	7:30 AM	3	3	2	3	11
7:45 AM	0	2	0	4	6	7:45 AM	0	0	1	0	1	7:45 AM	2	0	0	2	4
8:00 AM	0	2	0	1	3	8:00 AM	0	1	0	7	8	8:00 AM	5	2	3	0	10
8:15 AM	2	1	1	5	9	8:15 AM	3	2	0	4	9	8:15 AM	4	4	2	0	10
8:30 AM	0	2	0	2	4	8:30 AM	0	1	0	3	4	8:30 AM	2	0	0	0	2
8:45 AM	1	2	1	2	6	8:45 AM	0	2	0	1	3	8:45 AM	3	1	2	3	9
Count Total	3	11	2	21	37	Count Total	3	6	2	15	26	Count Total	19	12	11	10	52
Peak Hour	3	7	2	10	22	Peak Hour	3	6	0	15	24	Peak Hour	14	7	7	3	31

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 Bay Avenue & Capitola Avenue AM
Date: Tuesday, February 15, 2022
Study Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes in Study Peak Hour: 08:15 AM - 08:30 AM

Study Peak Hour (for all study intersections)

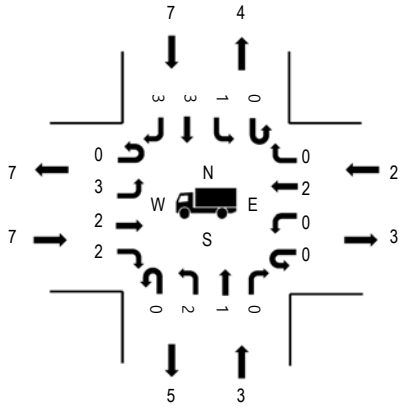
Motorized Vehicles



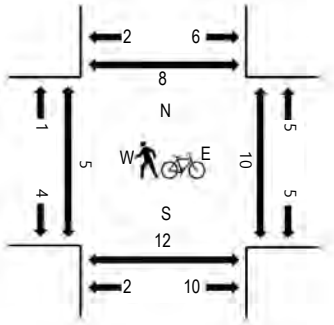
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.1%	0.76
WB	0.5%	0.92
NB	2.3%	0.91
SB	3.4%	0.68
All	1.8%	0.83

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Capitola Avenue Eastbound				Capitola Avenue Westbound				Bay Avenue Northbound				Bay Avenue Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	5	14	6	0	1	27	1	0	10	12	1	0	2	6	5	90	621
7:15 AM	0	10	16	12	0	4	30	2	0	9	6	2	0	4	20	6	121	817
7:30 AM	0	7	37	23	0	3	76	4	0	17	7	1	0	6	10	12	203	1,018
7:45 AM	0	14	31	17	0	6	70	9	0	12	14	2	0	6	16	10	207	1,067
8:00 AM	0	11	59	19	0	6	80	20	0	15	17	2	0	26	13	18	286	1,070
8:15 AM	0	15	78	18	0	8	86	8	0	16	10	7	0	38	22	16	322	
8:30 AM	0	16	33	27	0	7	82	8	0	20	14	2	0	8	17	18	252	
8:45 AM	0	10	21	23	0	7	69	10	0	13	19	3	0	6	20	9	210	
Count Total	0	88	289	145	0	42	520	62	0	112	99	20	0	96	124	94	1,691	
Peak Hour	0	56	201	81	0	27	318	45	0	63	55	13	0	78	68	62	1,067	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

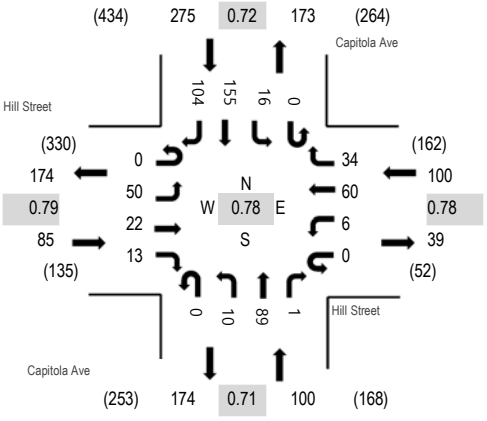
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	2	0	0	0	2	7:00 AM	0	0	0	0	0	7:00 AM	0	2	0	0	2
7:15 AM	1	0	0	0	1	7:15 AM	0	0	0	0	0	7:15 AM	3	1	2	1	7
7:30 AM	1	0	2	0	3	7:30 AM	0	0	0	0	0	7:30 AM	1	1	2	1	5
7:45 AM	2	0	2	2	6	7:45 AM	0	2	0	0	2	7:45 AM	1	0	1	2	4
8:00 AM	0	0	0	1	1	8:00 AM	6	0	3	2	11	8:00 AM	3	6	3	3	15
8:15 AM	2	1	0	1	4	8:15 AM	3	1	0	1	5	8:15 AM	0	4	4	2	10
8:30 AM	3	2	0	3	8	8:30 AM	1	0	0	0	1	8:30 AM	1	2	2	1	6
8:45 AM	1	0	3	1	5	8:45 AM	0	1	1	0	2	8:45 AM	1	6	1	3	11
Count Total	12	3	7	8	30	Count Total	10	4	4	3	21	Count Total	10	22	15	13	60
Peak Hour	7	3	2	7	19	Peak Hour	10	3	3	3	19	Peak Hour	5	12	10	8	35

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

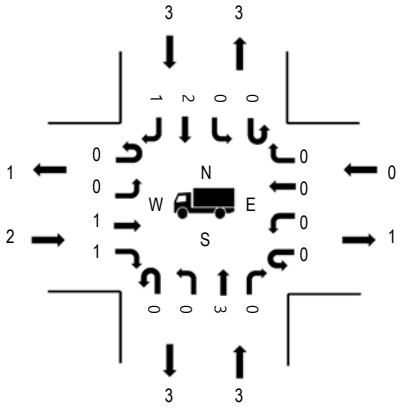
Location: 5 Capitola Ave & Hill Street AM
Date: Tuesday, February 15, 2022
Study Peak Hour: 07:45 AM - 08:45 AM
Peak 15-Minutes in Study Peak Hour: 08:15 AM - 08:30 AM

Study Peak Hour (for all study intersections)

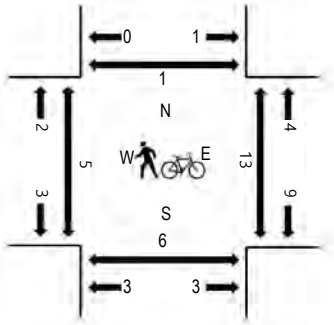
Motorized Vehicles



Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	2.4%	0.79
WB	0.0%	0.78
NB	3.0%	0.71
SB	1.1%	0.72
All	1.4%	0.78

Traffic Counts - Motorized Vehicles

Interval Start Time	Hill Street Eastbound				Hill Street Westbound				Capitola Ave Northbound				Capitola Ave Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	3	4	0	0	2	9	1	0	7	4	0	0	0	8	13	51	291
7:15 AM	0	7	0	3	0	0	5	4	0	1	9	0	0	0	21	22	72	411
7:30 AM	0	5	1	0	0	0	13	2	0	6	9	1	0	0	15	25	77	519
7:45 AM	0	7	1	1	0	1	15	3	0	2	15	1	0	3	20	22	91	560
8:00 AM	0	15	7	2	0	2	18	12	0	2	33	0	0	4	47	29	171	608
8:15 AM	0	18	6	3	0	3	13	14	0	3	25	0	0	8	57	30	180	
8:30 AM	0	10	8	7	0	0	14	5	0	3	16	0	0	1	31	23	118	
8:45 AM	0	21	4	2	0	4	16	6	0	9	20	2	0	1	24	30	139	
Count Total	0	86	31	18	0	12	103	47	0	33	131	4	0	17	223	194	899	
Peak Hour	0	50	22	13	0	6	60	34	0	10	89	1	0	16	155	104	560	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

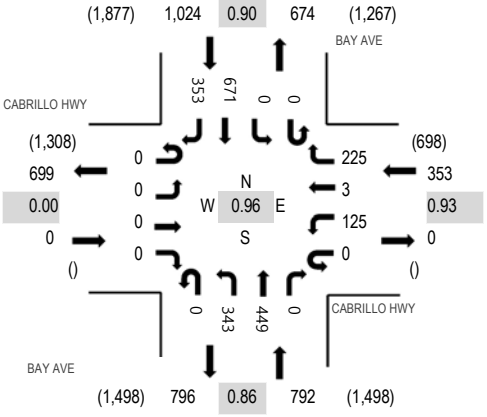
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	0	0	0	0	7:00 AM	0	0	1	0	1	7:00 AM	1	0	2	0	3
7:15 AM	0	0	0	0	0	7:15 AM	0	1	0	0	1	7:15 AM	0	0	3	0	3
7:30 AM	0	0	0	0	0	7:30 AM	0	0	1	3	4	7:30 AM	3	0	4	0	7
7:45 AM	0	0	0	0	0	7:45 AM	0	1	0	4	5	7:45 AM	1	1	4	0	6
8:00 AM	1	1	0	2	4	8:00 AM	0	1	1	2	4	8:00 AM	3	2	7	1	13
8:15 AM	0	0	0	1	1	8:15 AM	2	0	0	4	6	8:15 AM	1	1	2	0	4
8:30 AM	1	2	0	0	3	8:30 AM	0	0	0	1	1	8:30 AM	0	2	0	0	2
8:45 AM	0	0	0	2	2	8:45 AM	0	1	1	0	2	8:45 AM	0	0	3	0	3
Count Total	2	3	0	5	10	Count Total	2	4	4	14	24	Count Total	9	6	25	1	41
Peak Hour	2	3	0	3	8	Peak Hour	2	2	1	11	16	Peak Hour	5	6	13	1	25

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 BAY AVE & CABRILLO HWY PM
Date: Tuesday, September 13, 2022
Peak Hour: 02:45 PM - 03:45 PM
Peak 15-Minutes: 03:00 PM - 03:15 PM

Peak Hour

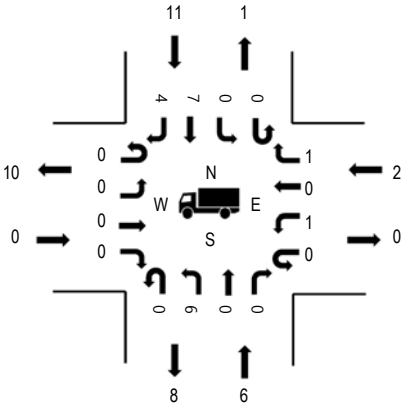
Motorized Vehicles



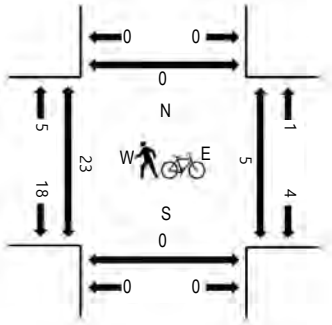
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	0.6%	0.93
NB	0.8%	0.86
SB	1.1%	0.90
All	0.9%	0.96

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	CABRILLO HWY Eastbound				CABRILLO HWY Westbound				BAY AVE Northbound				BAY AVE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
2:00 PM	0	0	0	0	0	42	0	34	0	79	85	0	0	0	120	78	438	1,987
2:15 PM	0	0	0	0	0	31	0	59	0	81	124	0	0	0	150	81	526	2,116
2:30 PM	0	0	0	0	0	33	0	47	0	85	103	0	0	0	152	72	492	2,138
2:45 PM	0	0	0	0	0	26	0	57	0	72	90	0	0	0	199	87	531	2,169
3:00 PM	0	0	0	0	0	40	1	50	0	103	128	0	0	0	163	82	567	2,086
3:15 PM	0	0	0	0	0	30	2	60	0	96	107	0	0	0	151	102	548	
3:30 PM	0	0	0	0	0	29	0	58	0	72	124	0	0	0	158	82	523	
3:45 PM	0	0	0	0	0	32	4	63	0	71	78	0	0	0	142	58	448	
Count Total	0	0	0	0	0	263	7	428	0	659	839	0	0	0	1,235	642	4,073	
Peak Hour	0	0	0	0	0	125	3	225	0	343	449	0	0	0	671	353	2,169	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

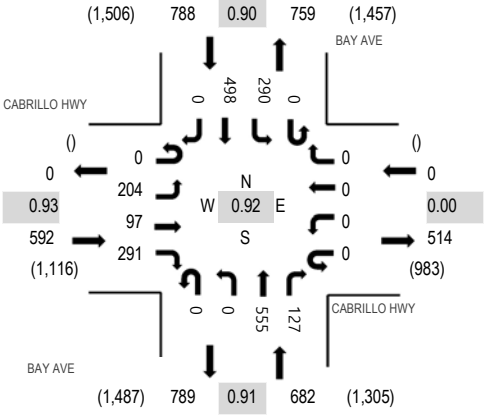
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
2:00 PM	0	1	4	3	8	2:00 PM	0	0	0	1	1	2:00 PM	2	0	3	0	5
2:15 PM	0	3	2	3	8	2:15 PM	0	0	0	1	1	2:15 PM	1	0	2	0	3
2:30 PM	0	3	0	3	6	2:30 PM	0	1	0	0	1	2:30 PM	0	0	3	0	3
2:45 PM	0	2	0	3	5	2:45 PM	0	0	0	0	0	2:45 PM	3	0	1	0	4
3:00 PM	0	1	1	3	5	3:00 PM	0	5	0	3	8	3:00 PM	5	0	2	0	7
3:15 PM	0	0	1	3	4	3:15 PM	0	4	0	3	7	3:15 PM	0	0	2	0	2
3:30 PM	0	3	0	2	5	3:30 PM	0	2	0	0	2	3:30 PM	15	0	0	0	15
3:45 PM	0	2	2	0	4	3:45 PM	0	0	0	4	4	3:45 PM	2	0	0	0	2
Count Total	0	15	10	20	45	Count Total	0	12	0	12	24	Count Total	28	0	13	0	41
Peak Hour	0	6	2	11	19	Peak Hour	0	11	0	6	17	Peak Hour	23	0	5	0	28

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 BAY AVE & CABRILLO HWY PM
Date: Tuesday, September 13, 2022
Peak Hour: 02:45 PM - 03:45 PM
Peak 15-Minutes: 03:00 PM - 03:15 PM

Peak Hour

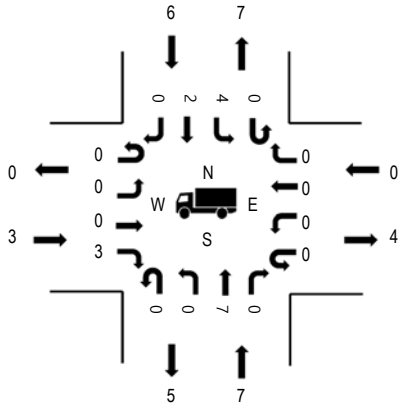
Motorized Vehicles



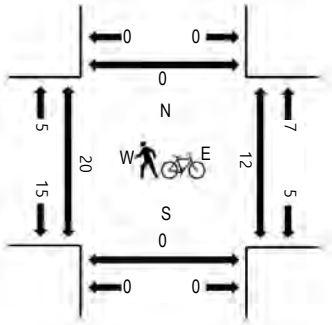
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.5%	0.93
WB	0.0%	0.00
NB	1.0%	0.91
SB	0.8%	0.90
All	0.8%	0.92

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	CABRILLO HWY Eastbound				CABRILLO HWY Westbound				BAY AVE Northbound				BAY AVE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
2:00 PM	0	57	0	61	0	0	0	0	0	0	106	44	0	63	110	0	441	1,903
2:15 PM	0	71	0	70	0	0	0	0	0	0	130	36	0	77	99	0	483	2,021
2:30 PM	0	41	4	71	0	0	0	0	0	0	139	38	0	85	99	0	477	2,053
2:45 PM	0	48	18	71	0	0	0	0	0	0	114	30	0	73	148	0	502	2,062
3:00 PM	0	64	26	71	0	0	0	0	0	0	170	27	0	76	125	0	559	2,024
3:15 PM	0	38	14	80	0	0	0	0	0	0	158	39	0	66	120	0	515	
3:30 PM	0	54	39	69	0	0	0	0	0	0	113	31	0	75	105	0	486	
3:45 PM	0	42	37	70	0	0	0	0	0	0	112	18	0	67	118	0	464	
Count Total	0	415	138	563	0	0	0	0	0	0	1,042	263	0	582	924	0	3,927	
Peak Hour	0	204	97	291	0	0	0	0	0	0	555	127	0	290	498	0	2,062	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

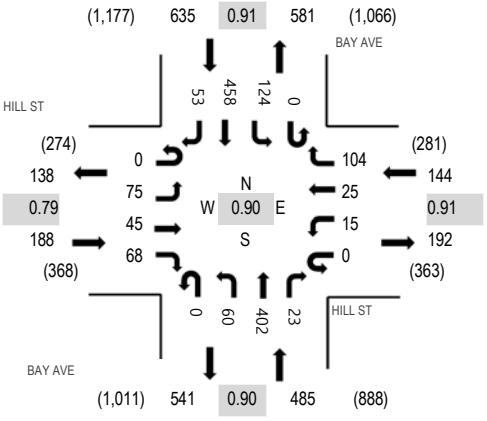
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
2:00 PM	1	0	0	4	5	2:00 PM	0	0	0	2	2	2:00 PM	2	0	3	0	5
2:15 PM	1	1	0	1	3	2:15 PM	0	1	0	1	2	2:15 PM	1	0	2	0	3
2:30 PM	1	4	0	3	8	2:30 PM	0	5	0	0	5	2:30 PM	0	0	3	0	3
2:45 PM	1	3	0	1	5	2:45 PM	0	0	0	0	0	2:45 PM	4	0	1	0	5
3:00 PM	0	1	0	2	3	3:00 PM	0	6	0	3	9	3:00 PM	5	0	4	0	9
3:15 PM	1	1	0	1	3	3:15 PM	0	2	0	1	3	3:15 PM	0	0	5	0	5
3:30 PM	1	2	0	2	5	3:30 PM	0	1	0	3	4	3:30 PM	11	0	2	0	13
3:45 PM	2	2	0	0	4	3:45 PM	0	0	0	6	6	3:45 PM	4	0	1	0	5
Count Total	8	14	0	14	36	Count Total	0	15	0	16	31	Count Total	27	0	21	0	48
Peak Hour	3	7	0	6	16	Peak Hour	0	9	0	7	16	Peak Hour	20	0	12	0	32

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 BAY AVE & HILL ST PM
Date: Tuesday, September 13, 2022
Peak Hour: 02:30 PM - 03:30 PM
Peak 15-Minutes: 03:00 PM - 03:15 PM

Peak Hour

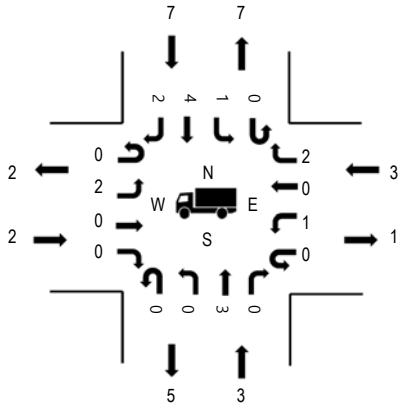
Motorized Vehicles



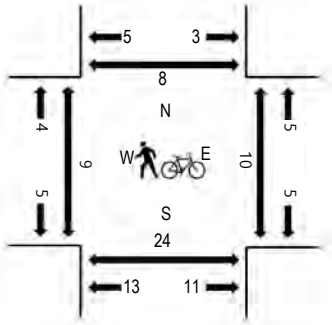
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.1%	0.79
WB	2.1%	0.91
NB	0.6%	0.90
SB	1.1%	0.91
All	1.0%	0.90

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	HILL ST Eastbound				HILL ST Westbound				BAY AVE Northbound				BAY AVE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
2:00 PM	0	20	8	13	0	6	7	18	0	10	87	10	0	22	85	10	296	1,317
2:15 PM	0	27	7	15	0	6	8	27	0	15	92	9	0	34	96	13	349	1,423
2:30 PM	0	15	8	16	0	3	3	20	0	11	104	8	0	27	90	13	318	1,452
2:45 PM	0	13	13	16	0	4	7	29	0	18	73	5	0	33	130	13	354	1,445
3:00 PM	0	23	18	21	0	3	6	28	0	18	112	4	0	28	129	12	402	1,397
3:15 PM	0	24	6	15	0	5	9	27	0	13	113	6	0	36	109	15	378	
3:30 PM	0	15	12	18	0	4	9	18	0	12	79	6	0	26	101	11	311	
3:45 PM	0	22	11	12	0	7	9	18	0	19	62	2	0	24	107	13	306	
Count Total	0	159	83	126	0	38	58	185	0	116	722	50	0	230	847	100	2,714	
Peak Hour	0	75	45	68	0	15	25	104	0	60	402	23	0	124	458	53	1,452	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

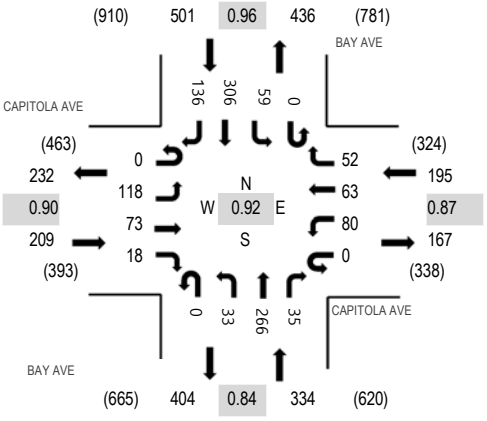
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
2:00 PM	0	0	1	3	4	2:00 PM	3	0	1	1	5	2:00 PM	0	0	1	2	3
2:15 PM	0	0	1	2	3	2:15 PM	0	0	0	1	1	2:15 PM	1	3	0	2	6
2:30 PM	1	2	0	2	5	2:30 PM	3	0	1	0	4	2:30 PM	3	3	2	2	10
2:45 PM	0	1	1	2	4	2:45 PM	1	0	0	1	2	2:45 PM	2	3	3	1	9
3:00 PM	1	0	0	1	2	3:00 PM	2	8	0	3	13	3:00 PM	1	7	1	3	12
3:15 PM	0	0	2	2	4	3:15 PM	1	3	0	2	6	3:15 PM	3	11	4	2	20
3:30 PM	1	0	2	5	8	3:30 PM	1	1	0	2	4	3:30 PM	9	4	4	1	18
3:45 PM	1	0	1	1	3	3:45 PM	1	1	1	3	6	3:45 PM	4	2	2	3	11
Count Total	4	3	8	18	33	Count Total	12	13	3	13	41	Count Total	23	33	17	16	89
Peak Hour	2	3	3	7	15	Peak Hour	7	11	1	6	25	Peak Hour	9	24	10	8	51

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 BAY AVE & CAPITOLA AVE PM
Date: Tuesday, September 13, 2022
Peak Hour: 02:30 PM - 03:30 PM
Peak 15-Minutes: 03:00 PM - 03:15 PM

Peak Hour

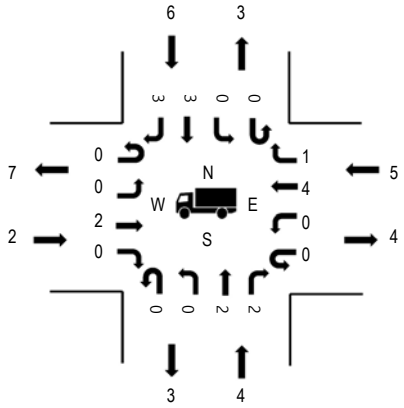
Motorized Vehicles



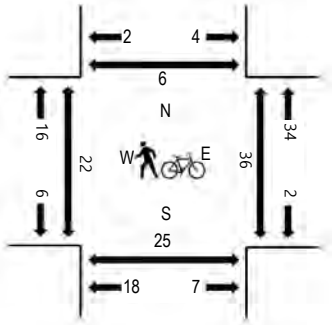
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.0%	0.90
WB	2.6%	0.87
NB	1.2%	0.84
SB	1.2%	0.96
All	1.4%	0.92

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	CAPITOLA AVE Eastbound				CAPITOLA AVE Westbound				BAY AVE Northbound				BAY AVE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
2:00 PM	0	24	15	4	0	6	16	11	0	5	56	9	0	18	28	41	233	1,077
2:15 PM	0	27	24	4	0	13	17	8	0	8	57	8	0	14	39	43	262	1,182
2:30 PM	0	34	23	4	0	12	18	14	0	9	48	11	0	11	79	34	297	1,239
2:45 PM	0	26	19	4	0	18	13	11	0	7	52	5	0	13	88	29	285	1,192
3:00 PM	0	31	16	8	0	26	14	16	0	9	82	12	0	20	67	37	338	1,170
3:15 PM	0	27	15	2	0	24	18	11	0	8	84	7	0	15	72	36	319	
3:30 PM	0	14	13	8	0	8	16	7	0	6	68	7	0	14	65	24	250	
3:45 PM	0	21	24	6	0	4	15	8	0	10	44	8	0	17	76	30	263	
Count Total	0	204	149	40	0	111	127	86	0	62	491	67	0	122	514	274	2,247	
Peak Hour	0	118	73	18	0	80	63	52	0	33	266	35	0	59	306	136	1,239	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

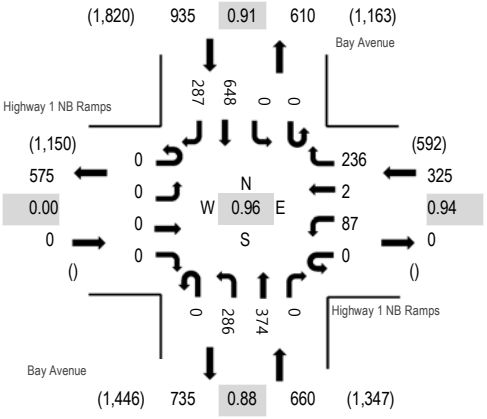
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
2:00 PM	1	0	0	2	3	2:00 PM	0	0	1	1	2	2:00 PM	2	2	1	0	5
2:15 PM	0	0	0	0	0	2:15 PM	0	0	1	2	3	2:15 PM	1	1	1	0	3
2:30 PM	0	2	2	3	7	2:30 PM	0	1	0	1	2	2:30 PM	0	5	2	2	9
2:45 PM	2	1	1	0	4	2:45 PM	0	0	0	2	2	2:45 PM	3	3	1	2	9
3:00 PM	0	0	0	1	1	3:00 PM	0	8	0	1	9	3:00 PM	8	7	16	0	31
3:15 PM	0	1	2	2	5	3:15 PM	0	1	0	1	2	3:15 PM	11	10	17	2	40
3:30 PM	0	0	0	3	3	3:30 PM	0	1	2	2	5	3:30 PM	5	1	1	1	8
3:45 PM	1	1	0	1	3	3:45 PM	2	0	1	2	5	3:45 PM	6	1	4	5	16
Count Total	4	5	5	12	26	Count Total	2	11	5	12	30	Count Total	36	30	43	12	121
Peak Hour	2	4	5	6	17	Peak Hour	0	10	0	5	15	Peak Hour	22	25	36	6	89

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 Bay Avenue & Highway 1 NB Ramps PM
Date: Tuesday, February 15, 2022
Study Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes in Study Peak Hour: 05:00 PM - 05:15 PM

Study Peak Hour (for all study intersections)

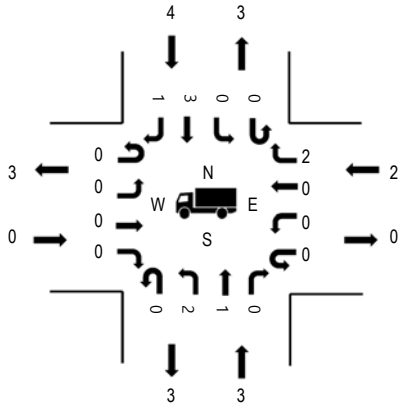
Motorized Vehicles



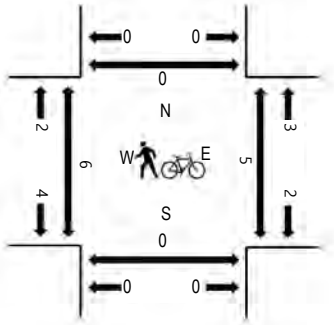
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	0.6%	0.94
NB	0.5%	0.88
SB	0.4%	0.91
All	0.5%	0.96

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Highway 1 NB Ramps Eastbound				Highway 1 NB Ramps Westbound				Bay Avenue Northbound				Bay Avenue Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	18	0	46	0	76	100	0	0	0	191	81	512	1,915
4:15 PM	0	0	0	0	0	27	0	43	0	75	93	0	0	0	159	70	467	1,901
4:30 PM	0	0	0	0	0	22	0	56	0	77	85	0	0	0	178	78	496	1,920
4:45 PM	0	0	0	0	0	19	1	66	0	61	90	0	0	0	144	59	440	1,878
5:00 PM	0	0	0	0	0	20	0	57	0	83	104	0	0	0	163	71	498	1,844
5:15 PM	0	0	0	0	0	26	1	57	0	65	95	0	0	0	163	79	486	
5:30 PM	0	0	0	0	0	29	0	47	0	77	105	0	0	0	140	56	454	
5:45 PM	0	0	0	0	0	22	0	35	0	77	84	0	0	0	125	63	406	
Count Total	0	0	0	0	0	183	2	407	0	591	756	0	0	0	1,263	557	3,759	
Peak Hour	0	0	0	0	0	87	2	236	0	286	374	0	0	0	648	287	1,920	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

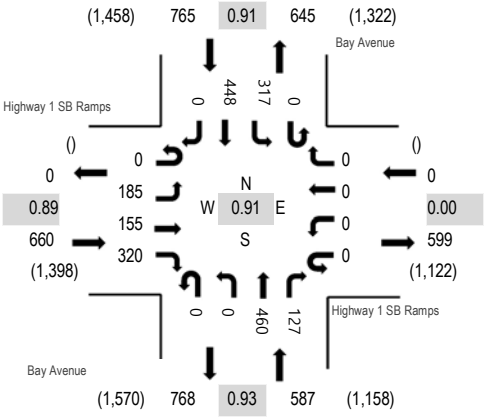
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	2	4	6	4:00 PM	0	3	0	1	4	4:00 PM	0	0	0	0	0
4:15 PM	0	3	2	2	7	4:15 PM	0	0	0	0	0	4:15 PM	2	0	3	0	5
4:30 PM	0	1	0	0	1	4:30 PM	0	4	0	3	7	4:30 PM	1	0	2	0	3
4:45 PM	0	0	1	1	2	4:45 PM	0	1	0	4	5	4:45 PM	3	0	2	0	5
5:00 PM	0	1	0	1	2	5:00 PM	0	1	0	2	3	5:00 PM	0	0	1	0	1
5:15 PM	0	1	1	2	4	5:15 PM	0	1	0	1	2	5:15 PM	2	0	0	0	2
5:30 PM	0	1	1	1	3	5:30 PM	0	0	0	0	0	5:30 PM	1	0	3	0	4
5:45 PM	0	1	0	2	3	5:45 PM	0	0	0	3	3	5:45 PM	2	0	3	0	5
Count Total	0	8	7	13	28	Count Total	0	10	0	14	24	Count Total	11	0	14	0	25
Peak Hour	0	3	2	4	9	Peak Hour	0	7	0	10	17	Peak Hour	6	0	5	0	11

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 2 Bay Avenue & Highway 1 SB Ramps PM
Date: Tuesday, February 15, 2022
Study Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes in Study Peak Hour: 04:00 PM - 04:15 PM

Study Peak Hour (for all study intersections)

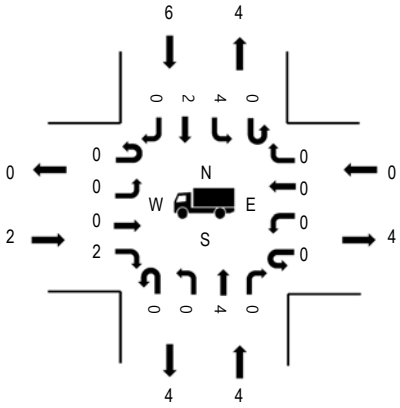
Motorized Vehicles



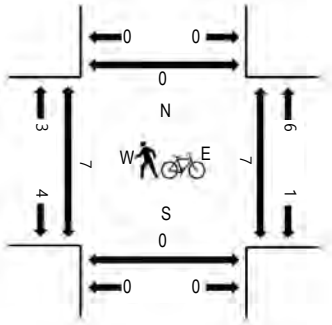
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.3%	0.89
WB	0.0%	0.00
NB	0.7%	0.93
SB	0.8%	0.91
All	0.6%	0.91

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Highway 1 SB Ramps Eastbound				Highway 1 SB Ramps Westbound				Bay Avenue Northbound				Bay Avenue Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	54	35	96	0	0	0	0	0	0	118	37	0	96	114	0	550	2,012
4:15 PM	0	43	33	67	0	0	0	0	0	0	124	33	0	80	113	0	493	1,976
4:30 PM	0	45	43	71	0	0	0	0	0	0	111	30	0	84	116	0	500	1,999
4:45 PM	0	43	44	86	0	0	0	0	0	0	107	27	0	57	105	0	469	1,992
5:00 PM	0	56	44	70	0	0	0	0	0	0	124	33	0	80	107	0	514	2,002
5:15 PM	0	57	39	99	0	0	0	0	0	0	102	30	0	61	128	0	516	
5:30 PM	0	56	42	88	0	0	0	0	0	0	116	17	0	64	110	0	493	
5:45 PM	0	52	28	107	0	0	0	0	0	0	114	35	0	50	93	0	479	
Count Total	0	406	308	684	0	0	0	0	0	0	916	242	0	572	886	0	4,014	
Peak Hour	0	185	155	320	0	0	0	0	0	0	460	127	0	317	448	0	2,012	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

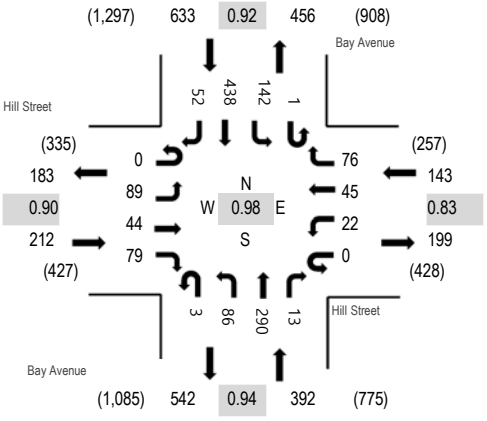
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	0	0	3	4	4:00 PM	0	3	0	0	3	4:00 PM	0	0	0	0	0
4:15 PM	0	3	0	2	5	4:15 PM	0	0	0	0	0	4:15 PM	4	0	3	0	7
4:30 PM	0	1	0	0	1	4:30 PM	0	3	0	3	6	4:30 PM	1	0	3	0	4
4:45 PM	1	0	0	1	2	4:45 PM	0	0	0	3	3	4:45 PM	2	0	1	0	3
5:00 PM	1	0	0	0	1	5:00 PM	0	1	0	2	3	5:00 PM	2	0	1	0	3
5:15 PM	1	1	0	2	4	5:15 PM	0	0	0	0	0	5:15 PM	1	0	0	0	1
5:30 PM	1	1	0	1	3	5:30 PM	0	0	0	0	0	5:30 PM	1	0	2	0	3
5:45 PM	4	0	0	1	5	5:45 PM	0	0	0	3	3	5:45 PM	3	0	2	0	5
Count Total	9	6	0	10	25	Count Total	0	7	0	11	18	Count Total	14	0	12	0	26
Peak Hour	2	4	0	6	12	Peak Hour	0	6	0	6	12	Peak Hour	7	0	7	0	14

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 3 Bay Avenue & Hill Street PM
Date: Tuesday, February 15, 2022
Study Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes in Study Peak Hour: 04:00 PM - 04:15 PM

Study Peak Hour (for all study intersections)

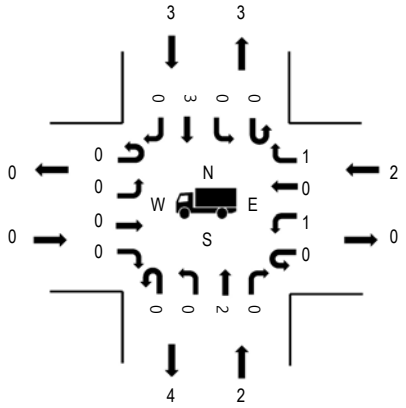
Motorized Vehicles



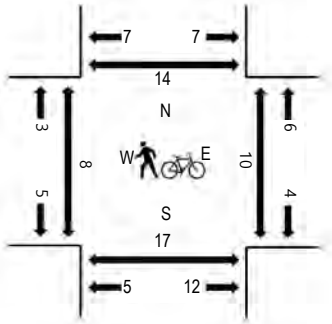
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.90
WB	1.4%	0.83
NB	0.5%	0.94
SB	0.5%	0.92
All	0.5%	0.98

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Hill Street Eastbound				Hill Street Westbound				Bay Avenue Northbound				Bay Avenue Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	23	9	16	0	7	18	18	1	17	69	3	1	41	120	9	352	1,380
4:15 PM	0	19	10	18	0	3	10	25	1	20	79	4	0	25	99	13	326	1,368
4:30 PM	0	22	15	22	0	7	9	21	0	25	72	4	0	36	99	18	350	1,382
4:45 PM	0	25	10	23	0	5	8	12	1	24	70	2	0	40	120	12	352	1,383
5:00 PM	0	23	13	21	0	2	10	15	0	20	84	2	1	44	93	12	340	1,376
5:15 PM	0	21	18	20	0	5	4	17	0	16	63	4	0	32	127	13	340	
5:30 PM	0	17	15	13	0	1	6	16	0	18	82	8	0	34	126	15	351	
5:45 PM	0	21	14	19	0	4	12	22	0	12	70	4	0	41	112	14	345	
Count Total	0	171	104	152	0	34	77	146	3	152	589	31	2	293	896	106	2,756	
Peak Hour	0	89	44	79	0	22	45	76	3	86	290	13	1	142	438	52	1,380	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

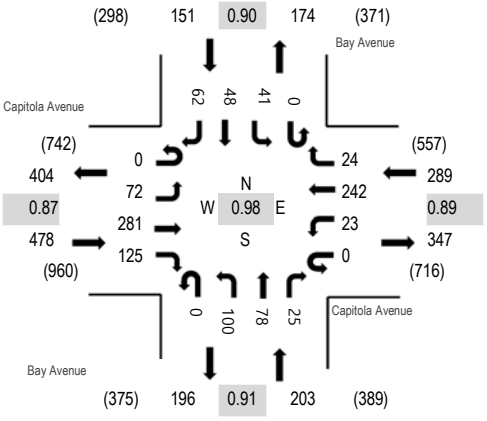
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	1	1	4:00 PM	1	0	0	1	2	4:00 PM	3	3	3	2	11
4:15 PM	0	1	1	1	3	4:15 PM	2	1	0	0	3	4:15 PM	0	2	1	4	7
4:30 PM	0	1	1	0	2	4:30 PM	0	4	1	3	8	4:30 PM	3	6	2	4	15
4:45 PM	0	0	0	1	1	4:45 PM	2	0	2	2	6	4:45 PM	2	6	4	4	16
5:00 PM	0	0	0	0	0	5:00 PM	3	0	1	1	5	5:00 PM	0	6	2	1	9
5:15 PM	0	1	0	0	1	5:15 PM	0	0	0	0	0	5:15 PM	3	4	2	2	11
5:30 PM	0	0	0	1	1	5:30 PM	0	0	0	0	0	5:30 PM	0	5	2	0	7
5:45 PM	0	0	0	0	0	5:45 PM	0	2	0	2	4	5:45 PM	0	4	7	5	16
Count Total	0	3	2	4	9	Count Total	8	7	4	9	28	Count Total	11	36	23	22	92
Peak Hour	0	2	2	3	7	Peak Hour	5	5	3	6	19	Peak Hour	8	17	10	14	49

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 4 Bay Avenue & Capitola Avenue PM
Date: Tuesday, February 15, 2022
Study Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes in Study Peak Hour: 04:45 PM - 05:00 PM

Study Peak Hour (for all study intersections)

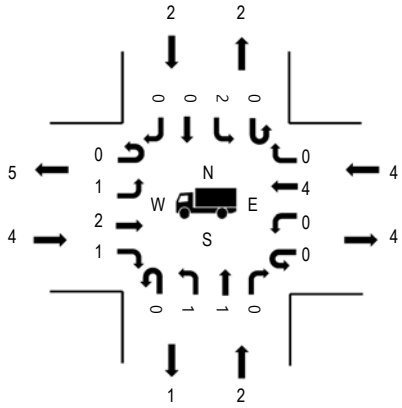
Motorized Vehicles



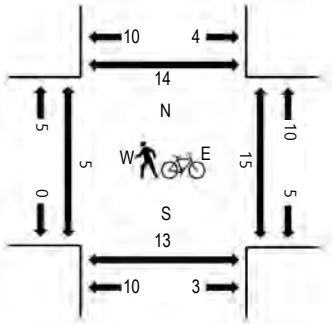
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.8%	0.87
WB	1.4%	0.89
NB	1.0%	0.91
SB	1.3%	0.90
All	1.1%	0.98

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Capitola Avenue Eastbound				Capitola Avenue Westbound				Bay Avenue Northbound				Bay Avenue Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	25	78	34	0	7	57	6	0	19	19	3	0	10	5	17	280	1,121
4:15 PM	0	21	56	27	0	4	70	7	0	26	22	8	0	10	14	16	281	1,109
4:30 PM	0	12	72	38	0	4	49	5	0	28	17	8	0	14	15	13	275	1,106
4:45 PM	0	14	75	26	0	8	66	6	0	27	20	6	0	7	14	16	285	1,109
5:00 PM	0	16	72	21	0	4	56	6	0	22	21	11	0	9	17	13	268	1,083
5:15 PM	0	26	89	25	0	3	52	5	0	17	18	6	0	9	17	11	278	
5:30 PM	0	17	65	24	0	8	60	8	0	21	24	6	0	15	17	13	278	
5:45 PM	0	20	79	28	0	6	47	13	0	14	23	3	0	5	9	12	259	
Count Total	0	151	586	223	0	44	457	56	0	174	164	51	0	79	108	111	2,204	
Peak Hour	0	72	281	125	0	23	242	24	0	100	78	25	0	41	48	62	1,121	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

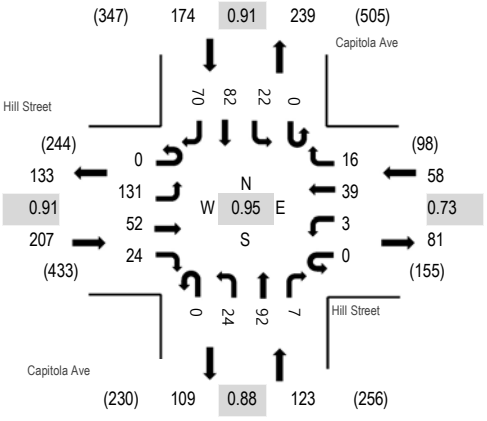
Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	1	1	1	4	4:00 PM	1	3	0	4	8	4:00 PM	0	2	6	5	13
4:15 PM	1	1	0	0	2	4:15 PM	0	0	1	0	1	4:15 PM	2	4	5	3	14
4:30 PM	1	0	2	1	4	4:30 PM	2	0	0	0	2	4:30 PM	0	4	0	0	4
4:45 PM	1	0	1	0	2	4:45 PM	0	1	0	1	2	4:45 PM	3	3	4	6	16
5:00 PM	0	0	0	0	0	5:00 PM	1	2	1	1	5	5:00 PM	4	5	5	4	18
5:15 PM	0	1	1	0	2	5:15 PM	0	0	0	0	0	5:15 PM	2	3	2	7	14
5:30 PM	0	1	0	0	1	5:30 PM	0	0	0	1	1	5:30 PM	1	1	4	4	10
5:45 PM	0	0	0	0	0	5:45 PM	2	0	1	0	3	5:45 PM	2	0	4	4	10
Count Total	4	4	5	2	15	Count Total	6	6	3	7	22	Count Total	14	22	30	33	99
Peak Hour	4	2	4	2	12	Peak Hour	3	4	1	5	13	Peak Hour	5	13	15	14	47

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 5 Capitola Ave & Hill Street PM
Date: Tuesday, February 15, 2022
Study Peak Hour: 04:00 PM - 05:00 PM
Peak 15-Minutes in Study Peak Hour: 04:00 PM - 04:15 PM

Study Peak Hour (for all study intersections)

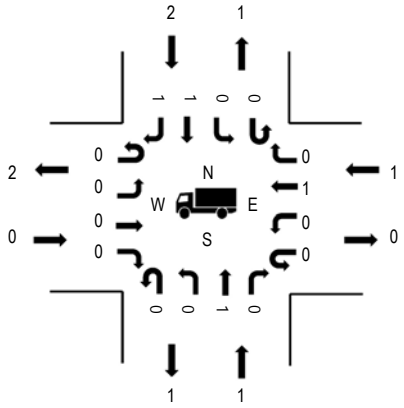
Motorized Vehicles



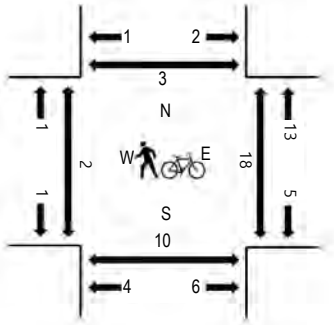
Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.91
WB	1.7%	0.73
NB	0.8%	0.88
SB	1.1%	0.91
All	0.7%	0.95

Heavy Vehicles



Pedestrians/Bicycles in Crosswalk



Traffic Counts - Motorized Vehicles

Interval Start Time	Hill Street Eastbound				Hill Street Westbound				Capitola Ave Northbound				Capitola Ave Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	33	13	3	0	1	8	8	0	6	27	2	0	5	25	18	149	562
4:15 PM	0	24	13	8	0	0	18	2	0	5	21	1	0	8	18	19	137	557
4:30 PM	0	37	12	8	0	2	8	4	0	8	20	0	0	4	16	19	138	558
4:45 PM	0	37	14	5	0	0	5	2	0	5	24	4	0	5	23	14	138	568
5:00 PM	0	38	15	6	0	2	5	3	0	3	28	0	0	5	22	17	144	572
5:15 PM	0	37	9	5	0	1	7	2	0	7	29	0	0	4	26	11	138	
5:30 PM	0	38	15	6	0	1	6	2	0	7	26	0	0	7	26	14	148	
5:45 PM	0	34	15	8	0	0	8	3	0	5	26	2	0	2	18	21	142	
Count Total	0	278	106	49	0	7	65	26	0	46	201	9	0	40	174	133	1,134	
Peak Hour	0	131	52	24	0	3	39	16	0	24	92	7	0	22	82	70	562	

Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles in Crosswalk

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	1	0	0	1	4:00 PM	0	1	2	2	5	4:00 PM	1	3	5	1	10
4:15 PM	0	0	1	0	1	4:15 PM	1	1	0	3	5	4:15 PM	0	2	6	1	9
4:30 PM	0	0	0	1	1	4:30 PM	0	0	0	0	0	4:30 PM	1	1	2	1	5
4:45 PM	0	0	0	1	1	4:45 PM	0	1	1	3	5	4:45 PM	0	4	5	0	9
5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	1	1	5:00 PM	1	4	5	1	11
5:15 PM	0	0	0	0	0	5:15 PM	1	2	0	0	3	5:15 PM	1	1	2	0	4
5:30 PM	0	1	0	0	1	5:30 PM	1	0	0	2	3	5:30 PM	2	0	6	1	9
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	1	1	5:45 PM	2	2	6	0	10
Count Total	0	2	1	2	5	Count Total	3	5	3	12	23	Count Total	8	17	37	5	67
Peak Hour	0	1	1	2	4	Peak Hour	1	3	3	8	15	Peak Hour	2	10	18	3	33

SWITRS COLLISION DATA – Bay Avenue / Hill Street Intersection (2017 to 2022)

Primary Rd BAY AV Distance (ft) 213. Direction N Secondary Rd HILL AV NCIC 4401 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Capitola County Santa Cruz Population 3 Rpt Dist 4401 Beat Type 0 CalTrans Badge 482 Collision Date 20180813 Time 2013 Day MON
Primary Collision Factor IMPROP TURN Violation 22107 Collision Type BROADSIDE Severity INJURY #Killed 0 #Injured 1 Tow Away? N Process Date 20180925
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With BICYCLE Lighting DUSK/DAWN Ped Action Cntrl Dev FNCTNG Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	34	F	O	HNBD		RGT TURN	S	A	0100	HONDA	2007	- 3	N		-	G -
2	BICY	22	M		HNBD		PROC ST	S	L	0400	-	-	- 3	N		-	- -

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
BICY	COMP PN	22	M	1	0	G	W

Primary Rd BAY AV Distance (ft) 203. Direction N Secondary Rd HILL ST NCIC 4401 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Capitola County Santa Cruz Population 3 Rpt Dist Beat Type 0 CalTrans Badge 3654 Collision Date 20180213 Time 0750 Day TUE
Primary Collision Factor R-O-W AUTO Violation 21804A Collision Type BROADSIDE Severity INJURY #Killed 0 #Injured 1 Tow Away? Y Process Date 20180628
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev FNCTNG Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	67	F	W	HNBD		ENT TRAF	S	D	2200	TOYOT	2000	- 3	G		N	G -
2	DRVR	39	F	H	HNBD		PROC ST	S	A	0100	VOLVO	2000	- 3	N		-	G -

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	COMP PN	39	F	1	0	G	-

Primary Rd BAY AV Distance (ft) 0.00 Direction N Secondary Rd HILL ST NCIC 4401 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Capitola County Santa Cruz Population 3 Rpt Dist Beat 007 Type 0 CalTrans Badge 522 Collision Date 20180705 Time 1618 Day THU
Primary Collision Factor IMPROP TURN Violation 22107 Collision Type SIDESWIPE Severity PDO #Killed 0 #Injured 0 Tow Away? N Process Date 20181018
Weather1 CLEAR Weather2 Rdwy Surface DRY Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run MSDMNR Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev NT PRS/FCTR Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	998	-		HBD-UNK		RGT TURN	-	A	0700	HONDA		- 3	A	20002	N	B -
2	DRVR	28	M	W	HNBD		STOPPED	N	F	2600	DODGE	2014	- 3	N		-	G -

Primary Rd BAY AV Distance (ft) 0.00 Direction Secondary Rd HILL AV NCIC 4401 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Capitola County Santa Cruz Population 3 Rpt Dist Beat Type 0 CalTrans Badge 3654 Collision Date 20190115 Time 0800 Day TUE
Primary Collision Factor IMPROP TURN Violation 22107 Collision Type HIT OBJECT Severity PDO #Killed 0 #Injured 0 Tow Away? N Process Date 20190321
Weather1 RAINING Weather2 Rdwy Surface WET Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With FIXED OBJ Lighting DAYLIGHT Ped Action Cntrl Dev NT PRS/FCTR Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	75	F	W	HNBD		U-TURN	N	A	0100	HONDA	2009	- 3	N		-	- G

Primary Rd BAY AV Distance (ft) 177. Direction N Secondary Rd HILL ST NCIC 4401 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Capitola County Santa Cruz Population 3 Rpt Dist 4401 Beat 007 Type 0 CalTrans Badge 527 Collision Date 20190109 Time 1019 Day WED
Primary Collision Factor R-O-W AUTO Violation 21804A Collision Type SIDESWIPE Severity PDO #Killed 0 #Injured 0 Tow Away? N Process Date 20190207
Weather1 CLOUDY Weather2 RAINING Rdwy Surface WET Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev FNCTNG Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	41	M	H	HNBD		LFT TURN	E	A	0100	TOYOT	2000	- 3	E		G	G -
2	DRVR	58	F	W	HNBD		PROC ST	S	A	0100	SUBAR	2000	- 3	G		-	G -

Primary Rd BAY AV Distance (ft) 0.00 Direction Secondary Rd HILL ST NCIC 4401 State Hwy? N Route Postmile Prefix Postmile Side of Hwy
City Capitola County Santa Cruz Population 3 Rpt Dist 4401 Beat 001 Type 0 CalTrans Badge 527 Collision Date 20190204 Time 1608 Day MON
Primary Collision Factor UNSAFE SPEED Violation 22350 Collision Type BROADSIDE Severity PDO #Killed 0 #Injured 0 Tow Away? Y Process Date 20190225
Weather1 CLOUDY Weather2 RAINING Rdwy Surface WET Rdwy Cond1 NO UNUSL CND Rdwy Cond2 Spec Cond 0
Hit and Run FELONY Motor Vehicle Involved With OTHER MV Lighting DAYLIGHT Ped Action Cntrl Dev FNCTNG Loc Type Ramp/Int

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	32	M	H	IMP UNK	IMP UNK	PROC ST	N	D	2200	TOYOT	2018	- 3	A	22450	I	- B
2	DRVR	26	M	H	HNBD		LFT TURN	S	A	0100	NISSA	2014	- 3	G		-	- G

SWITRS COLLISION DATA – Bay Avenue / Hill Street Intersection (2017 to 2022)

Primary Rd	Distance (ft)	Direction	Secondary Rd	NCIC	State Hwy?	Route	Postmile Prefix	Postmile	Side of Hwy
BAY AV	74.0	N	HILL ST	4401	N				

City	County	Population	Rpt Dist	Beat	Type	CalTrans	Badge	Collision Date	Time	Day
Capitola	Santa Cruz	3	4401		0		521	20191209	1722	MON

Primary Collision Factor	Violation	Collision Type	Severity	#Killed	#Injured	Tow Away?	Process Date
R-O-W AUTO	21800A	SIDESWIPE	PDO	0	0	N	20200130

Weather1	Weather2	Rdwy Surface	Rdwy Cond1	Rdwy Cond2	Spec Cond
CLEAR		DRY	NO UNUSL CND		0

Hit and Run	Motor Vehicle Involved With	Lighting	Ped Action	Cntrl Dev	Loc Type	Ramp/Int
	OTHER MV	DARK - ST		FNCTNG		

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	19	F	H	HNBD		PROC ST	N	A	0100	FORD	2015	- 3	J	-	-	M
2	DRVR	64	F	B	HNBD		RGT TURN	N	A	0100	SUBAR	2019	- 3	N	-	-	G

Victim Info

Party	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F								
2								

Primary Rd	Distance (ft)	Direction	Secondary Rd	NCIC	State Hwy?	Route	Postmile Prefix	Postmile	Side of Hwy
BAY AV	0.00		HILL ST	4401	N				

City	County	Population	Rpt Dist	Beat	Type	CalTrans	Badge	Collision Date	Time	Day
Capitola	Santa Cruz	3	4401		0		526	20201008	1600	THU

Primary Collision Factor	Violation	Collision Type	Severity	#Killed	#Injured	Tow Away?	Process Date
UNSAFE SPEED	22350	BROADSIDE	INJURY	0	1	N	20201218

Weather1	Weather2	Rdwy Surface	Rdwy Cond1	Rdwy Cond2	Spec Cond
CLEAR		DRY	NO UNUSL CND		0

Hit and Run	Motor Vehicle Involved With	Lighting	Ped Action	Cntrl Dev	Loc Type	Ramp/Int
	OTHER MV	DAYLIGHT		FNCTNG		

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	40	F	H	HNBD		PROC ST	W	A	0100	-	2017	- 3	G	-	G	M
2	DRVR	52	F	H	HNBD		PROC ST	N	A	0100	-	2020	- 3	G	-	G	M

Victim Info

Party	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1F								
2	PASS	COMP PN	32	F	3	0	G	M

Primary Rd	Distance (ft)	Direction	Secondary Rd	NCIC	State Hwy?	Route	Postmile Prefix	Postmile	Side of Hwy
BAY AV	0.00		HILL ST	4401	N				

City	County	Population	Rpt Dist	Beat	Type	CalTrans	Badge	Collision Date	Time	Day
Capitola	Santa Cruz	3	4401		0		5215	20210326	2006	FRI

Primary Collision Factor	Violation	Collision Type	Severity	#Killed	#Injured	Tow Away?	Process Date
NOT DRIVER		HEAD-ON	PDO	0	0	Y	20210513

Weather1	Weather2	Rdwy Surface	Rdwy Cond1	Rdwy Cond2	Spec Cond
CLEAR		DRY	NO UNUSL CND		0

Hit and Run	Motor Vehicle Involved With	Lighting	Ped Action	Cntrl Dev	Loc Type	Ramp/Int
	FIXED OBJ	DARK - ST		FNCTNG		

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1	DRVR	75	F	W	IMP UNK	IMP UNK	RAN OFF RD	E	A	0700	-	2001	- -	-	-	-	G

Victim Info

Party	ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
1								

SWITRS COLLISION DATA – Bay Avenue / Hill Street Intersection (2017 to 2022)

Primary Rd BAY AV | Distance (ft) 482. | Direction N | Secondary Rd HILL ST | NCIC 4401 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Capitola | County Santa Cruz | Population 3 | Rpt Dist 4401 | Beat | Type 0 | CalTrans | Badge 535 | Collision Date 20220214 | Time 1330 | Day MON
Primary Collision Factor UNSAFE SPEED | Violation 22350 | Collision Type REAR END | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? N | Process Date 20220316
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev | Loc Type | Ramp/Int

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	47	M	W	HNBD		PROC ST	N	J	4800	FORD	2016	- -	N		-	- G
2	DRVR	21	F	H			STOPPED	N	A	0700	-	2010	- -	N		-	- G

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
PASS		22	M	3	0	G	-

Primary Rd BAY AV | Distance (ft) 0.00 | Direction | Secondary Rd HILL ST | NCIC 4401 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Capitola | County Santa Cruz | Population 3 | Rpt Dist 4401 | Beat | Type 0 | CalTrans | Badge 535 | Collision Date 20220329 | Time 1252 | Day TUE
Primary Collision Factor R-O-W AUTO | Violation 21801A | Collision Type BROADSIDE | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? Y | Process Date 20220504
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev | Loc Type | Ramp/Int

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	74	F	H	HNBD		LFT TURN	W	A	0100	-	2010	- 3	-		-	- G
2	DRVR	37	M	W	HNBD		PROC ST	S	F	2600	-	2010	- 3	-		-	- L

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Primary Rd BAY AV | Distance (ft) 0.00 | Direction | Secondary Rd HILL ST | NCIC 4401 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Capitola | County Santa Cruz | Population 3 | Rpt Dist SANTA | Beat 007 | Type 0 | CalTrans | Badge 528 | Collision Date 20220507 | Time 1004 | Day SAT
Primary Collision Factor R-O-W AUTO | Violation 21800A | Collision Type SIDESWIPE | Severity INJURY | #Killed 0 | #Injured 1 | Tow Away? Y | Process Date 20220720
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	52	F	W	HNBD		PROC ST	N	A	0100	-	2013	- 3	A	21800	- -	C
2	DRVR	60	M	W	HNBD		LFT TURN	N	A	0100	FORD	2019	- 3	-		- -	C

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected
DRVR	COMP PN	52	F	1	1	C	-

Primary Rd BAY AV | Distance (ft) 0.00 | Direction | Secondary Rd HILL ST | NCIC 4401 | State Hwy? N | Route | Postmile Prefix | Postmile | Side of Hwy
City Capitola | County Santa Cruz | Population 3 | Rpt Dist SANTA | Beat 007 | Type 0 | CalTrans | Badge 483 | Collision Date 20220717 | Time 1818 | Day SUN
Primary Collision Factor R-O-W AUTO | Violation 21804A | Collision Type BROADSIDE | Severity PDO | #Killed 0 | #Injured 0 | Tow Away? N | Process Date 20220919
Weather1 CLEAR | Weather2 | Rdwy Surface DRY | Rdwy Cond1 NO UNUSL CND | Rdwy Cond2 | Spec Cond 0
Hit and Run | Motor Vehicle Involved With OTHER MV | Lighting DAYLIGHT | Ped Action | Cntrl Dev FNCTNG | Loc Type | Ramp/Int

Party Info

Party	Type	Age	Sex	Race	Sobriety1	Sobriety2	Move Pre	Dir	SW Veh	CHP Veh	Make	Year	SP Info	OAF1	Viol	OAF2	Safety Equip
1F	DRVR	43	M	A	HNBD		ENT TRAF	E	A	0100	-	2013	- 3	N		- G	-
2	DRVR	31	F		HNBD		PROC ST	N	A	0100	-	2020	- 3	N		- G	-

Victim Info

ROLE	Ext Of Inj	AGE	Sex	Seat Pos	Safety	EQUIP	Ejected

Capitola Police Department Collision Data

ACPED

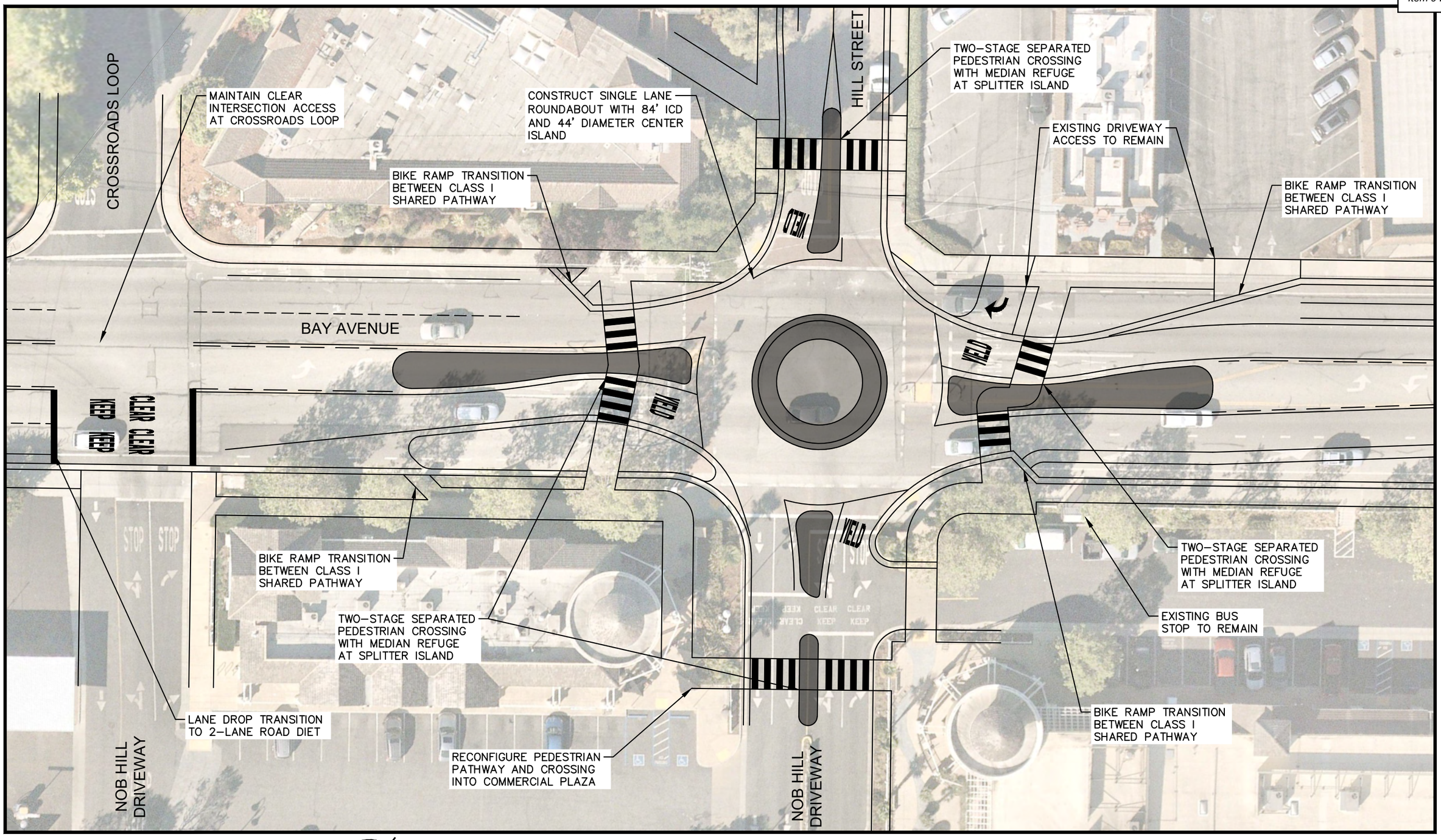
	2017	2018	2019	2020	2021	2022	2023
Case #	17C-00845	None	19C-01981	None	None	22C-01538	23C-01056
Location	Bay Av S Hill St		809 Bay Ave - Nob Hill Parking Lot			Bay Av S Hill St	Bay Av / Hill St

ACBike

	2017	2018	2019	2020	2021	2022	2023
Case #		18C-01395	None	None	21C-01221	22C-01007	None
Location		800 Bay Ave			828 Bay Ave	809 Bay Ave - Nob Hill Parking Lot	

*Note: Highlighted data was at the study intersection; all other data was in the vicinity, but not intersection related.

Attachment B – Intersection Alternative Concept Layouts



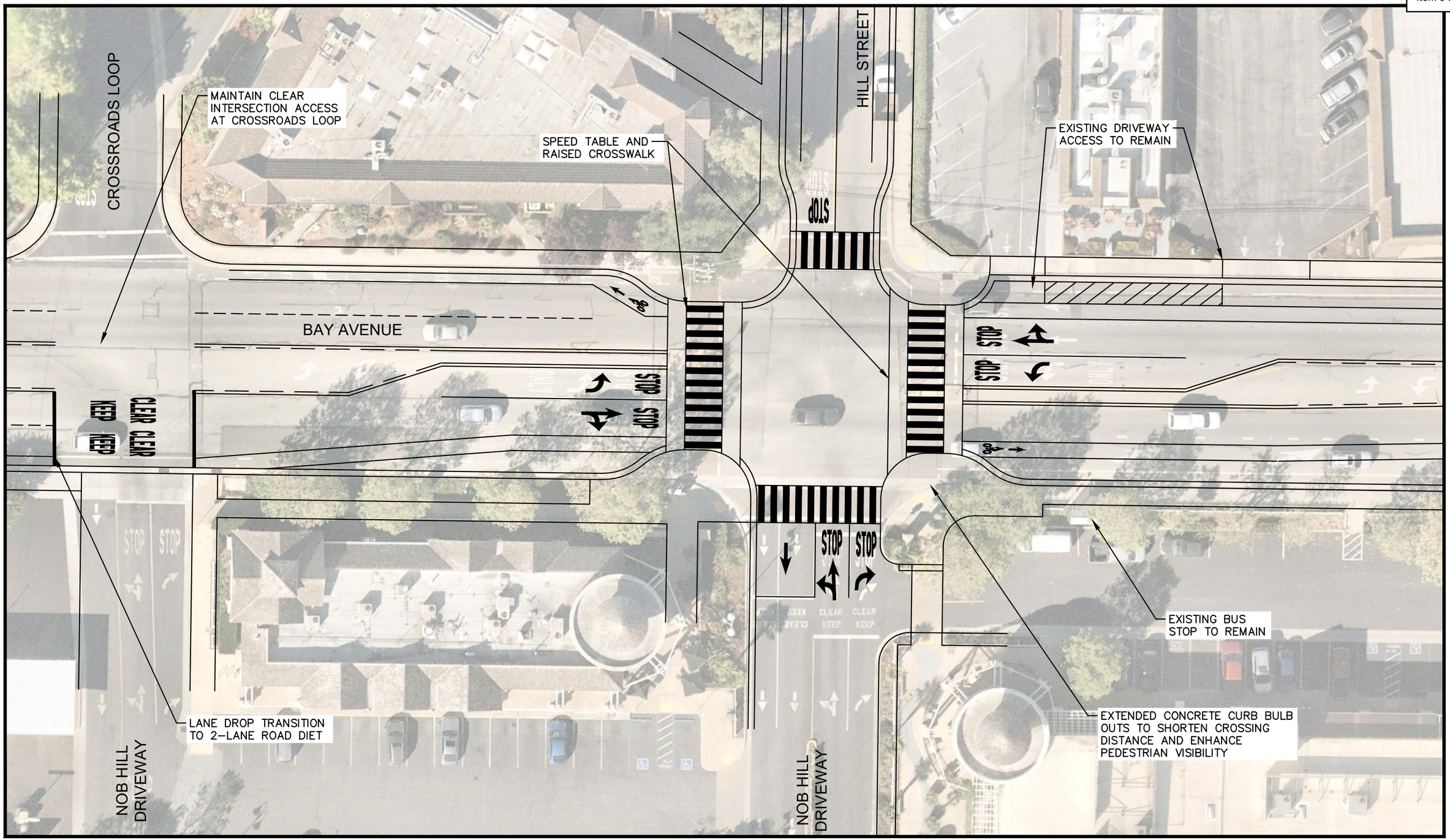
Kimley»Horn

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

CONCEPT LAYOUT FOR PLANNING PURPOSES. NOT FOR CONSTRUCTION

ALTERNATIVE 2 ROUNDABOUT



Kimley»Horn

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

CONCEPT LAYOUT FOR PLANNING PURPOSES. NOT FOR CONSTRUCTION

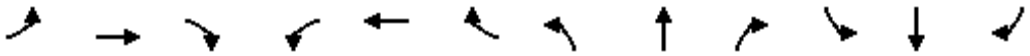
ALTERNATIVE 3
ALL-WAY STOP WITH ROAD DIET

DWW–097763143 SEPTEMBER 2023

Attachment C – Synchro and Sidra LOS Results

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing
11/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	69	3	139	390	538	0	0	407	474
Future Volume (veh/h)	0	0	0	69	3	139	390	538	0	0	407	474
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.93
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1826	1900	1885	1885	1856	0	0	1870	1885
Adj Flow Rate, veh/h				73	3	146	411	566	0	0	428	499
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				5	0	1	1	3	0	0	2	1
Cap, veh/h				214	4	195	742	2574	0	0	426	353
Arrive On Green				0.12	0.12	0.12	0.83	1.00	0.00	0.00	0.24	0.24
Sat Flow, veh/h				1739	33	1583	1795	3618	0	0	1870	1469
Grp Volume(v), veh/h				73	0	149	411	566	0	0	428	499
Grp Sat Flow(s),veh/h/ln				1739	0	1615	1795	1763	0	0	1777	1469
Q Serve(g_s), s				2.3	0.0	5.3	4.4	0.0	0.0	0.0	14.4	14.4
Cycle Q Clear(g_c), s				2.3	0.0	5.3	4.4	0.0	0.0	0.0	14.4	14.4
Prop In Lane				1.00		0.98	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				214	0	199	742	2574	0	0	426	353
V/C Ratio(X)				0.34	0.00	0.75	0.55	0.22	0.00	0.00	1.00	1.42
Avail Cap(c_a), veh/h				371	0	345	742	2574	0	0	426	353
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.68	0.68	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				24.1	0.0	25.4	3.4	0.0	0.0	0.0	22.8	22.8
Incr Delay (d2), s/veh				0.3	0.0	2.1	0.4	0.1	0.0	0.0	44.5	202.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.9	0.0	2.0	1.0	0.0	0.0	0.0	10.9	24.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.4	0.0	27.5	3.8	0.1	0.0	0.0	67.3	225.6
LnGrp LOS				C	A	C	A	A	A	A	F	F
Approach Vol, veh/h					222			977			927	
Approach Delay, s/veh					26.5			1.7			152.5	
Approach LOS					C			A			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	29.4	19.0		11.6		48.4						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	17.3	* 14		* 13		38.4						
Max Q Clear Time (g_c+I1), s	6.4	16.4		7.3		2.0						
Green Ext Time (p_c), s	0.2	0.0		0.2		1.7						

Intersection Summary		
HCM 6th Ctrl Delay		70.0
HCM 6th LOS		E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Bay Ave & Hwy 1 SB Off-Ramp

Existing
11/28/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	317	0	263	0	0	0	0	604	125	188	308	0
Future Volume (veh/h)	317	0	263	0	0	0	0	604	125	188	308	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	1900	1856				0	1885	1856	1870	1856	0
Adj Flow Rate, veh/h	420	0	185				0	636	132	198	324	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	0	3				0	1	3	2	3	0
Cap, veh/h	542	0	245				0	852	176	589	2459	0
Arrive On Green	0.16	0.00	0.16				0.00	0.29	0.29	0.11	0.23	0.00
Sat Flow, veh/h	3478	0	1572				0	3031	608	1781	3618	0
Grp Volume(v), veh/h	420	0	185				0	387	381	198	324	0
Grp Sat Flow(s),veh/h/ln	1739	0	1572				0	1791	1754	1781	1763	0
Q Serve(g_s), s	7.0	0.0	6.8				0.0	11.8	11.8	6.2	4.4	0.0
Cycle Q Clear(g_c), s	7.0	0.0	6.8				0.0	11.8	11.8	6.2	4.4	0.0
Prop In Lane	1.00		1.00				0.00		0.35	1.00		0.00
Lane Grp Cap(c), veh/h	542	0	245				0	519	509	589	2459	0
V/C Ratio(X)	0.78	0.00	0.76				0.00	0.75	0.75	0.34	0.13	0.00
Avail Cap(c_a), veh/h	742	0	335				0	519	509	589	2459	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.97	0.97	0.75	0.75	0.00
Uniform Delay (d), s/veh	24.3	0.0	24.2				0.0	19.3	19.3	20.6	8.7	0.0
Incr Delay (d2), s/veh	2.3	0.0	3.8				0.0	9.1	9.4	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	2.6				0.0	5.8	5.8	2.6	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	28.1				0.0	28.4	28.7	20.7	8.8	0.0
LnGrp LOS	C	A	C				A	C	C	C	A	A
Approach Vol, veh/h		605						768			522	
Approach Delay, s/veh		27.0						28.6			13.3	
Approach LOS		C						C			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		46.5			24.5	22.0		13.5				
Change Period (Y+Rc), s		4.6			4.6	* 4.6		4.2				
Max Green Setting (Gmax), s		38.4			14.3	* 17		12.8				
Max Q Clear Time (g_c+I1), s		6.4			8.2	13.8		9.0				
Green Ext Time (p_c), s		0.9			0.1	0.9		0.4				

Intersection Summary			
HCM 6th Ctrl Delay			23.9
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: Bay Ave & Retail Dwy/Hill St

Existing
11/28/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	17	30	7	38	134	59	392	12	86	329	29
Future Volume (veh/h)	51	17	30	7	38	134	59	392	12	86	329	29
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.99	1.00		0.95	1.00		0.96
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1811	1900	1900	1900	1856	1885	1870	1885	1767	1900	1856	1856
Adj Flow Rate, veh/h	58	19	34	8	43	152	67	445	14	98	374	33
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	6	0	0	0	3	1	2	1	9	0	3	3
Cap, veh/h	424	113	337	122	81	259	125	977	31	164	969	85
Arrive On Green	0.21	0.21	0.21	0.21	0.21	0.21	0.07	0.28	0.28	0.09	0.30	0.30
Sat Flow, veh/h	1064	527	1570	28	377	1208	1781	3538	111	1810	3267	286
Grp Volume(v), veh/h	77	0	34	203	0	0	67	225	234	98	201	206
Grp Sat Flow(s),veh/h/ln	1591	0	1570	1613	0	0	1781	1791	1858	1810	1763	1791
Q Serve(g_s), s	0.0	0.0	0.6	0.0	0.0	0.0	1.2	3.3	3.4	1.7	2.9	3.0
Cycle Q Clear(g_c), s	1.1	0.0	0.6	3.6	0.0	0.0	1.2	3.3	3.4	1.7	2.9	3.0
Prop In Lane	0.75		1.00	0.04		0.75	1.00		0.06	1.00		0.16
Lane Grp Cap(c), veh/h	537	0	337	462	0	0	125	494	513	164	523	531
V/C Ratio(X)	0.14	0.00	0.10	0.44	0.00	0.00	0.54	0.45	0.46	0.60	0.38	0.39
Avail Cap(c_a), veh/h	991	0	877	1013	0	0	276	1000	1038	309	1012	1028
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.4	0.0	10.2	11.4	0.0	0.0	14.5	9.7	9.7	14.1	9.0	9.0
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.7	0.0	0.0	3.6	0.7	0.6	3.5	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.2	1.1	0.0	0.0	0.5	1.1	1.1	0.7	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.5	0.0	10.3	12.0	0.0	0.0	18.0	10.3	10.3	17.5	9.5	9.5
LnGrp LOS	B	A	B	B	A	A	B	B	B	B	A	A
Approach Vol, veh/h		111			203			526			505	
Approach Delay, s/veh		10.4			12.0			11.3			11.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.4	13.4		11.4	6.8	14.1		11.4
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.5	18.0		18.0	5.0	18.5		18.0
Max Q Clear Time (g_c+I1), s	3.7	5.4		3.1	3.2	5.0		5.6
Green Ext Time (p_c), s	0.0	2.3		0.4	0.0	2.1		1.0

Intersection Summary		
HCM 6th Ctrl Delay		11.2
HCM 6th LOS		B

Intersection	
Intersection Delay, s/veh	22.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	201	81	45	318	27	63	55	13	78	68	62
Future Vol, veh/h	56	201	81	45	318	27	63	55	13	78	68	62
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	242	98	54	383	33	76	66	16	94	82	75
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	18.7	30.8	14.6	19.2
HCM LOS	C	D	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	53%	0%	22%	0%	100%	1%	38%
Vol Thru, %	47%	0%	78%	0%	0%	91%	33%
Vol Right, %	0%	100%	0%	100%	0%	8%	30%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	118	13	257	81	41	350	208
LT Vol	63	0	56	0	41	5	78
Through Vol	55	0	201	0	0	318	68
RT Vol	0	13	0	81	0	27	62
Lane Flow Rate	142	16	310	98	49	421	251
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.327	0.032	0.623	0.174	0.101	0.81	0.532
Departure Headway (Hd)	8.281	7.284	7.238	6.407	7.484	6.923	7.642
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	432	489	499	557	478	522	471
Service Time	6.064	5.066	5.008	4.177	5.249	4.688	5.719
HCM Lane V/C Ratio	0.329	0.033	0.621	0.176	0.103	0.807	0.533
HCM Control Delay	15.1	10.3	21.3	10.5	11.1	33.1	19.2
HCM Lane LOS	C	B	C	B	B	D	C
HCM 95th-tile Q	1.4	0.1	4.2	0.6	0.3	7.8	3.1

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

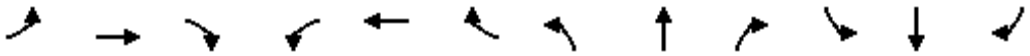
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	22	13	6	60	34	10	89	1	16	155	104
Future Vol, veh/h	50	22	13	6	60	34	10	89	1	16	155	104
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	0	4	7	0	0	0	0	3	0	0	2	2
Mvmt Flow	64	28	17	8	77	44	13	114	1	21	199	133
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	9.1	9	10.9
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	59%	6%	6%
Vol Thru, %	89%	26%	60%	56%
Vol Right, %	1%	15%	34%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	85	100	275
LT Vol	10	50	6	16
Through Vol	89	22	60	155
RT Vol	1	13	34	104
Lane Flow Rate	128	109	128	353
Geometry Grp	1	1	1	1
Degree of Util (X)	0.175	0.157	0.176	0.435
Departure Headway (Hd)	4.917	5.196	4.955	4.441
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	724	684	717	807
Service Time	2.985	3.275	3.033	2.492
HCM Lane V/C Ratio	0.177	0.159	0.179	0.437
HCM Control Delay	9	9.3	9.1	10.9
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	0.6	0.6	0.6	2.2

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing Mid
11/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	125	3	225	343	449	0	0	671	353
Future Volume (veh/h)	0	0	0	125	3	225	343	449	0	0	671	353
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1885	1885	1885	1885	1885	0	0	1885	1885
Adj Flow Rate, veh/h				130	3	234	357	468	0	0	699	368
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				1	1	1	1	1	0	0	1	1
Cap, veh/h				322	4	283	642	2414	0	0	534	281
Arrive On Green				0.18	0.18	0.18	0.71	1.00	0.00	0.00	0.24	0.24
Sat Flow, veh/h				1795	20	1580	1795	3676	0	0	2320	1170
Grp Volume(v), veh/h				130	0	237	357	468	0	0	562	505
Grp Sat Flow(s),veh/h/ln				1795	0	1601	1795	1791	0	0	1791	1605
Q Serve(g_s), s				3.8	0.0	8.6	5.6	0.0	0.0	0.0	14.4	14.4
Cycle Q Clear(g_c), s				3.8	0.0	8.6	5.6	0.0	0.0	0.0	14.4	14.4
Prop In Lane				1.00		0.99	1.00		0.00	0.00		0.73
Lane Grp Cap(c), veh/h				322	0	287	642	2414	0	0	430	385
V/C Ratio(X)				0.40	0.00	0.83	0.56	0.19	0.00	0.00	1.31	1.31
Avail Cap(c_a), veh/h				383	0	341	642	2414	0	0	430	385
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.72	0.72	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				21.8	0.0	23.7	6.3	0.0	0.0	0.0	22.8	22.8
Incr Delay (d2), s/veh				0.3	0.0	11.4	0.5	0.1	0.0	0.0	154.7	157.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.5	0.0	3.8	1.5	0.0	0.0	0.0	24.1	21.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				22.1	0.0	35.1	6.8	0.1	0.0	0.0	177.5	179.9
LnGrp LOS				C	A	D	A	A	A	A	F	F
Approach Vol, veh/h					367			825			1067	
Approach Delay, s/veh					30.5			3.0			178.6	
Approach LOS					C			A			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	26.0	19.0		15.0		45.0						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	17.3	* 14		* 13		38.4						
Max Q Clear Time (g_c+I1), s	7.6	16.4		10.6		2.0						
Green Ext Time (p_c), s	0.1	0.0		0.2		1.4						

Intersection Summary		
HCM 6th Ctrl Delay		90.4
HCM 6th LOS		F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	97	291	0	0	0	0	555	127	290	498	0
Future Volume (veh/h)	204	97	291	0	0	0	0	555	127	290	498	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885				0	1885	1885	1885	1885	0
Adj Flow Rate, veh/h	183	240	230				0	603	138	315	541	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1				0	1	1	1	1	0
Cap, veh/h	319	335	284				0	836	191	554	2419	0
Arrive On Green	0.18	0.18	0.18				0.00	0.29	0.29	0.10	0.22	0.00
Sat Flow, veh/h	1795	1885	1598				0	2977	658	1795	3676	0
Grp Volume(v), veh/h	183	240	230				0	374	367	315	541	0
Grp Sat Flow(s),veh/h/ln	1795	1885	1598				0	1791	1750	1795	1791	0
Q Serve(g_s), s	5.6	7.2	8.3				0.0	11.2	11.3	10.0	7.4	0.0
Cycle Q Clear(g_c), s	5.6	7.2	8.3				0.0	11.2	11.3	10.0	7.4	0.0
Prop In Lane	1.00		1.00				0.00		0.38	1.00		0.00
Lane Grp Cap(c), veh/h	319	335	284				0	519	508	554	2419	0
V/C Ratio(X)	0.57	0.72	0.81				0.00	0.72	0.72	0.57	0.22	0.00
Avail Cap(c_a), veh/h	383	402	341				0	519	508	554	2419	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.96	0.96	0.34	0.34	0.00
Uniform Delay (d), s/veh	22.6	23.2	23.7				0.0	19.1	19.1	23.1	10.4	0.0
Incr Delay (d2), s/veh	0.6	3.4	9.7				0.0	8.0	8.3	0.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.2	3.6				0.0	5.5	5.4	4.7	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.2	26.6	33.4				0.0	27.2	27.5	23.4	10.5	0.0
LnGrp LOS	C	C	C				A	C	C	C	B	A
Approach Vol, veh/h		653						741			856	
Approach Delay, s/veh		28.0						27.3			15.3	
Approach LOS		C						C			B	

Timer - Assigned Phs	2		5	6		8
Phs Duration (G+Y+Rc), s	45.1		23.1	22.0		14.9
Change Period (Y+Rc), s	4.6		4.6	* 4.6		4.2
Max Green Setting (Gmax), s	38.4		14.3	* 17		12.8
Max Q Clear Time (g_c+I1), s	9.4		12.0	13.3		10.3
Green Ext Time (p_c), s	1.6		0.1	0.9		0.4

Intersection Summary	
HCM 6th Ctrl Delay	22.9
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: Bay Ave & Retail Dwy/Hill St

Existing Mid
11/28/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	45	68	15	25	104	60	402	23	124	458	53
Future Volume (veh/h)	75	45	68	15	25	104	60	402	23	124	458	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.97	0.98		0.97	1.00		0.98	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	83	50	76	17	28	116	67	447	26	138	509	59
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	360	179	364	135	86	270	124	906	53	192	975	113
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.07	0.26	0.26	0.11	0.30	0.30
Sat Flow, veh/h	804	761	1549	80	365	1149	1795	3436	199	1795	3231	373
Grp Volume(v), veh/h	133	0	76	161	0	0	67	232	241	138	281	287
Grp Sat Flow(s),veh/h/ln	1565	0	1549	1594	0	0	1795	1791	1845	1795	1791	1814
Q Serve(g_s), s	0.0	0.0	1.4	0.0	0.0	0.0	1.2	3.8	3.8	2.5	4.5	4.5
Cycle Q Clear(g_c), s	2.0	0.0	1.4	2.9	0.0	0.0	1.2	3.8	3.8	2.5	4.5	4.5
Prop In Lane	0.62		1.00	0.11		0.72	1.00		0.11	1.00		0.21
Lane Grp Cap(c), veh/h	539	0	364	491	0	0	124	472	487	192	540	547
V/C Ratio(X)	0.25	0.00	0.21	0.33	0.00	0.00	0.54	0.49	0.49	0.72	0.52	0.52
Avail Cap(c_a), veh/h	949	0	814	944	0	0	262	942	970	288	968	980
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	0.0	10.5	11.1	0.0	0.0	15.4	10.7	10.7	14.8	9.9	9.9
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.4	0.0	0.0	3.7	0.8	0.8	5.0	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.4	0.9	0.0	0.0	0.6	1.3	1.3	1.1	1.4	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.0	0.0	10.8	11.5	0.0	0.0	19.1	11.5	11.5	19.8	10.7	10.7
LnGrp LOS	B	A	B	B	A	A	B	B	B	B	B	B
Approach Vol, veh/h		209			161			540			706	
Approach Delay, s/veh		10.9			11.5			12.4			12.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.2	13.5		12.6	6.9	14.8		12.6
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.5	18.0		18.0	5.0	18.5		18.0
Max Q Clear Time (g_c+I1), s	4.5	5.8		4.0	3.2	6.5		4.9
Green Ext Time (p_c), s	0.0	2.3		0.8	0.0	2.9		0.7

Intersection Summary		
HCM 6th Ctrl Delay		12.2
HCM 6th LOS		B

Intersection	
Intersection Delay, s/veh	22.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	306	136	33	266	35	118	73	18	52	63	80
Future Vol, veh/h	59	306	136	33	266	35	118	73	18	52	63	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	333	148	36	289	38	128	79	20	57	68	87
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	26.7	22.8	17.7	17.7
HCM LOS	D	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	62%	0%	16%	0%	100%	1%	27%
Vol Thru, %	38%	0%	84%	0%	0%	87%	32%
Vol Right, %	0%	100%	0%	100%	0%	12%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	191	18	365	136	30	304	195
LT Vol	118	0	59	0	30	3	52
Through Vol	73	0	306	0	0	266	63
RT Vol	0	18	0	136	0	35	80
Lane Flow Rate	208	20	397	148	32	331	212
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.477	0.039	0.793	0.263	0.071	0.671	0.465
Departure Headway (Hd)	8.27	7.231	7.199	6.397	7.894	7.302	7.893
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	434	492	500	559	452	493	454
Service Time	6.056	5.016	4.977	4.174	5.676	5.084	5.985
HCM Lane V/C Ratio	0.479	0.041	0.794	0.265	0.071	0.671	0.467
HCM Control Delay	18.4	10.3	32.4	11.5	11.3	23.9	17.7
HCM Lane LOS	C	B	D	B	B	C	C
HCM 95th-tile Q	2.5	0.1	7.3	1	0.2	4.9	2.4

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

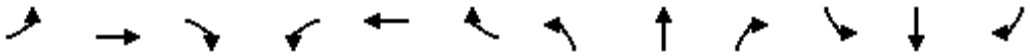
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Future Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	138	55	26	3	41	17	26	97	7	23	86	74
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	8.2	8.9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	63%	5%	13%
Vol Thru, %	74%	25%	67%	47%
Vol Right, %	6%	12%	28%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	208	58	174
LT Vol	25	131	3	22
Through Vol	92	52	39	82
RT Vol	7	25	16	70
Lane Flow Rate	131	219	61	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.174	0.289	0.081	0.23
Departure Headway (Hd)	4.8	4.757	4.753	4.524
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	744	753	749	791
Service Time	2.849	2.803	2.81	2.568
HCM Lane V/C Ratio	0.176	0.291	0.081	0.231
HCM Control Delay	8.9	9.7	8.2	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	1.2	0.3	0.9

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing
11/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	92	2	236	291	374	0	0	648	287
Future Volume (veh/h)	0	0	0	92	2	236	291	374	0	0	648	287
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1885	1885	1900	0	0	1885	1900
Adj Flow Rate, veh/h				96	2	246	303	390	0	0	675	299
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				0	0	1	1	0	0	0	1	0
Cap, veh/h				333	2	295	633	2416	0	0	570	252
Arrive On Green				0.18	0.18	0.18	0.70	1.00	0.00	0.00	0.24	0.24
Sat Flow, veh/h				1810	13	1599	1795	3705	0	0	2468	1051
Grp Volume(v), veh/h				96	0	248	303	390	0	0	509	465
Grp Sat Flow(s),veh/h/ln				1810	0	1612	1795	1805	0	0	1791	1634
Q Serve(g_s), s				2.7	0.0	8.9	4.5	0.0	0.0	0.0	14.4	14.4
Cycle Q Clear(g_c), s				2.7	0.0	8.9	4.5	0.0	0.0	0.0	14.4	14.4
Prop In Lane				1.00		0.99	1.00		0.00	0.00		0.64
Lane Grp Cap(c), veh/h				333	0	297	633	2416	0	0	430	392
V/C Ratio(X)				0.29	0.00	0.84	0.48	0.16	0.00	0.00	1.18	1.18
Avail Cap(c_a), veh/h				386	0	344	633	2416	0	0	430	392
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.79	0.79	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				21.1	0.0	23.6	6.4	0.0	0.0	0.0	22.8	22.8
Incr Delay (d2), s/veh				0.2	0.0	12.8	0.2	0.1	0.0	0.0	104.6	106.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.1	0.0	4.1	1.2	0.0	0.0	0.0	18.1	16.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				21.3	0.0	36.3	6.6	0.1	0.0	0.0	127.4	129.0
LnGrp LOS				C	A	D	A	A	A	A	F	F
Approach Vol, veh/h					344			693			974	
Approach Delay, s/veh					32.1			2.9			128.2	
Approach LOS					C			A			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.7	19.0		15.3		44.7						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	17.3	* 14		* 13		38.4						
Max Q Clear Time (g_c+I1), s	6.5	16.4		10.9		2.0						
Green Ext Time (p_c), s	0.1	0.0		0.2		1.1						

Intersection Summary		
HCM 6th Ctrl Delay		68.6
HCM 6th LOS		E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Bay Ave & Hwy 1 SB Off-Ramp

Existing
11/28/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	155	325	0	0	0	0	465	132	317	454	0
Future Volume (veh/h)	185	155	325	0	0	0	0	465	132	317	454	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885				0	1885	1900	1885	1900	0
Adj Flow Rate, veh/h	192	268	269				0	511	145	348	499	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	1				0	1	0	1	0	0
Cap, veh/h	360	378	318				0	792	223	516	2362	0
Arrive On Green	0.20	0.20	0.20				0.00	0.29	0.29	0.09	0.22	0.00
Sat Flow, veh/h	1810	1900	1598				0	2825	770	1795	3705	0
Grp Volume(v), veh/h	192	268	269				0	334	322	348	499	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1598				0	1791	1709	1795	1805	0
Q Serve(g_s), s	5.7	7.9	9.7				0.0	9.8	9.9	11.2	6.8	0.0
Cycle Q Clear(g_c), s	5.7	7.9	9.7				0.0	9.8	9.9	11.2	6.8	0.0
Prop In Lane	1.00		1.00				0.00		0.45	1.00		0.00
Lane Grp Cap(c), veh/h	360	378	318				0	519	496	516	2362	0
V/C Ratio(X)	0.53	0.71	0.85				0.00	0.64	0.65	0.67	0.21	0.00
Avail Cap(c_a), veh/h	386	405	341				0	519	496	516	2362	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	0.98	0.98	0.53	0.53	0.00
Uniform Delay (d), s/veh	21.5	22.4	23.1				0.0	18.6	18.6	24.4	10.8	0.0
Incr Delay (d2), s/veh	0.5	4.2	15.5				0.0	5.9	6.3	1.5	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.6	4.7				0.0	4.6	4.5	5.5	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	26.6	38.7				0.0	24.5	25.0	25.9	10.9	0.0
LnGrp LOS	C	C	D				A	C	C	C	B	A
Approach Vol, veh/h		729						656			847	
Approach Delay, s/veh		29.9						24.7			17.1	
Approach LOS		C						C			B	

Timer - Assigned Phs	2		5	6		8
Phs Duration (G+Y+Rc), s	43.9		21.9	22.0		16.1
Change Period (Y+Rc), s	4.6		4.6	* 4.6		4.2
Max Green Setting (Gmax), s	38.4		14.3	* 17		12.8
Max Q Clear Time (g_c+I1), s	8.8		13.2	11.9		11.7
Green Ext Time (p_c), s	1.4		0.0	1.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	23.5
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
3: Bay Ave & Retail Dwy/Hill St

Existing
11/28/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	89	44	79	23	45	86	89	290	14	154	438	52
Future Volume (veh/h)	89	44	79	23	45	86	89	290	14	154	438	52
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		0.96	0.98		0.96	1.00		0.95	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1870
Adj Flow Rate, veh/h	91	45	81	23	46	88	91	296	14	157	447	53
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	2
Cap, veh/h	375	150	334	155	126	197	156	881	41	211	915	108
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.09	0.25	0.25	0.12	0.28	0.28
Sat Flow, veh/h	879	697	1546	130	586	912	1810	3501	165	1810	3241	382
Grp Volume(v), veh/h	136	0	81	157	0	0	91	152	158	157	248	252
Grp Sat Flow(s),veh/h/ln	1576	0	1546	1628	0	0	1810	1805	1861	1810	1805	1819
Q Serve(g_s), s	0.0	0.0	1.4	0.0	0.0	0.0	1.6	2.2	2.3	2.7	3.7	3.8
Cycle Q Clear(g_c), s	2.0	0.0	1.4	2.6	0.0	0.0	1.6	2.2	2.3	2.7	3.7	3.8
Prop In Lane	0.67		1.00	0.15		0.56	1.00		0.09	1.00		0.21
Lane Grp Cap(c), veh/h	525	0	334	478	0	0	156	454	468	211	509	513
V/C Ratio(X)	0.26	0.00	0.24	0.33	0.00	0.00	0.58	0.33	0.34	0.74	0.49	0.49
Avail Cap(c_a), veh/h	1004	0	857	1014	0	0	279	1001	1032	307	1028	1036
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	0.0	10.5	11.0	0.0	0.0	14.3	9.9	9.9	13.9	9.7	9.7
Incr Delay (d2), s/veh	0.3	0.0	0.4	0.4	0.0	0.0	3.4	0.4	0.4	5.6	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	0.4	0.8	0.0	0.0	0.7	0.7	0.8	1.2	1.2	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.0	0.0	10.9	11.4	0.0	0.0	17.7	10.4	10.4	19.4	10.4	10.4
LnGrp LOS	B	A	B	B	A	A	B	B	B	B	B	B
Approach Vol, veh/h		217			157			401			657	
Approach Delay, s/veh		11.0			11.4			12.0			12.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.3	12.7		11.5	7.3	13.7		11.5
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5
Max Green Setting (Gmax), s	5.5	18.0		18.0	5.0	18.5		18.0
Max Q Clear Time (g_c+I1), s	4.7	4.3		4.0	3.6	5.8		4.6
Green Ext Time (p_c), s	0.0	1.5		0.9	0.0	2.6		0.7

Intersection Summary		
HCM 6th Ctrl Delay		12.1
HCM 6th LOS		B

Intersection	
Intersection Delay, s/veh	15.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	72	281	125	23	242	24	100	78	25	41	48	62
Future Vol, veh/h	72	281	125	23	242	24	100	78	25	41	48	62
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	73	287	128	23	247	24	102	80	26	42	49	63
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	17.8	15.5	14	13.3
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	56%	0%	20%	0%	100%	1%	27%
Vol Thru, %	44%	0%	80%	0%	0%	90%	32%
Vol Right, %	0%	100%	0%	100%	0%	9%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	25	353	125	21	268	151
LT Vol	100	0	72	0	21	2	41
Through Vol	78	0	281	0	0	242	48
RT Vol	0	25	0	125	0	24	62
Lane Flow Rate	182	26	360	128	21	274	154
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.376	0.046	0.651	0.202	0.042	0.504	0.306
Departure Headway (Hd)	7.448	6.446	6.51	5.693	7.193	6.623	7.152
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	483	555	558	633	500	548	502
Service Time	5.194	4.191	4.221	3.404	4.907	4.337	5.201
HCM Lane V/C Ratio	0.377	0.047	0.645	0.202	0.042	0.5	0.307
HCM Control Delay	14.6	9.5	20.6	9.8	10.2	15.9	13.3
HCM Lane LOS	B	A	C	A	B	C	B
HCM 95th-tile Q	1.7	0.1	4.7	0.8	0.1	2.8	1.3

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

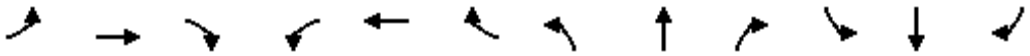
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Future Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	138	55	26	3	41	17	26	97	7	23	86	74
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	8.2	8.9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	63%	5%	13%
Vol Thru, %	74%	25%	67%	47%
Vol Right, %	6%	12%	28%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	208	58	174
LT Vol	25	131	3	22
Through Vol	92	52	39	82
RT Vol	7	25	16	70
Lane Flow Rate	131	219	61	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.174	0.289	0.081	0.23
Departure Headway (Hd)	4.8	4.757	4.753	4.524
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	744	753	749	791
Service Time	2.849	2.803	2.81	2.568
HCM Lane V/C Ratio	0.176	0.291	0.081	0.231
HCM Control Delay	8.9	9.7	8.2	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	1.2	0.3	0.9

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing
11/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	69	3	139	390	538	0	0	407	474
Future Volume (veh/h)	0	0	0	69	3	139	390	538	0	0	407	474
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.93
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1826	1900	1885	1885	1856	0	0	1870	1885
Adj Flow Rate, veh/h				73	3	146	411	566	0	0	428	499
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				5	0	1	1	3	0	0	2	1
Cap, veh/h				214	4	195	742	2574	0	0	426	353
Arrive On Green				0.12	0.12	0.12	0.41	0.73	0.00	0.00	0.24	0.24
Sat Flow, veh/h				1739	33	1583	1795	3618	0	0	1870	1469
Grp Volume(v), veh/h				73	0	149	411	566	0	0	428	499
Grp Sat Flow(s),veh/h/ln				1739	0	1615	1795	1763	0	0	1777	1469
Q Serve(g_s), s				2.3	0.0	5.3	10.4	3.1	0.0	0.0	14.4	14.4
Cycle Q Clear(g_c), s				2.3	0.0	5.3	10.4	3.1	0.0	0.0	14.4	14.4
Prop In Lane				1.00		0.98	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				214	0	199	742	2574	0	0	426	353
V/C Ratio(X)				0.34	0.00	0.75	0.55	0.22	0.00	0.00	1.00	1.42
Avail Cap(c_a), veh/h				371	0	345	742	2574	0	0	426	353
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.68	0.68	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				24.1	0.0	25.4	13.4	2.6	0.0	0.0	22.8	22.8
Incr Delay (d2), s/veh				0.3	0.0	2.1	0.4	0.1	0.0	0.0	44.5	202.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.9	0.0	2.0	3.9	0.7	0.0	0.0	10.9	24.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.4	0.0	27.5	13.7	2.7	0.0	0.0	67.3	225.6
LnGrp LOS				C	A	C	B	A	A	A	F	F
Approach Vol, veh/h					222			977			927	
Approach Delay, s/veh					26.5			7.4			152.5	
Approach LOS					C			A			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	29.4	19.0		11.6		48.4						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	17.3	* 14		* 13		38.4						
Max Q Clear Time (g_c+I1), s	12.4	16.4		7.3		5.1						
Green Ext Time (p_c), s	0.1	0.0		0.2		1.7						

Intersection Summary		
HCM 6th Ctrl Delay		72.7
HCM 6th LOS		E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Bay Ave & Hwy 1 SB Off-Ramp

Existing
11/28/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	317	0	263	0	0	0	0	604	125	188	308	0
Future Volume (veh/h)	317	0	263	0	0	0	0	604	125	188	308	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	1900	1856				0	1885	1856	1870	1856	0
Adj Flow Rate, veh/h	420	0	185				0	636	132	198	324	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	0	3				0	1	3	2	3	0
Cap, veh/h	542	0	245				0	852	176	589	2459	0
Arrive On Green	0.16	0.00	0.16				0.00	0.29	0.29	0.11	0.23	0.00
Sat Flow, veh/h	3478	0	1572				0	3031	608	1781	3618	0
Grp Volume(v), veh/h	420	0	185				0	387	381	198	324	0
Grp Sat Flow(s),veh/h/ln	1739	0	1572				0	1791	1754	1781	1763	0
Q Serve(g_s), s	7.0	0.0	6.8				0.0	11.8	11.8	6.2	4.4	0.0
Cycle Q Clear(g_c), s	7.0	0.0	6.8				0.0	11.8	11.8	6.2	4.4	0.0
Prop In Lane	1.00		1.00				0.00		0.35	1.00		0.00
Lane Grp Cap(c), veh/h	542	0	245				0	519	509	589	2459	0
V/C Ratio(X)	0.78	0.00	0.76				0.00	0.75	0.75	0.34	0.13	0.00
Avail Cap(c_a), veh/h	742	0	335				0	519	509	589	2459	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.75	0.75	0.00
Uniform Delay (d), s/veh	24.3	0.0	24.2				0.0	19.3	19.3	20.6	8.7	0.0
Incr Delay (d2), s/veh	2.3	0.0	3.8				0.0	9.4	9.7	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	2.6				0.0	5.9	5.8	2.6	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	28.1				0.0	28.7	29.0	20.7	8.8	0.0
LnGrp LOS	C	A	C				A	C	C	C	A	A
Approach Vol, veh/h		605						768			522	
Approach Delay, s/veh		27.0						28.9			13.3	
Approach LOS		C						C			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		46.5			24.5	22.0		13.5				
Change Period (Y+Rc), s		4.6			4.6	* 4.6		4.2				
Max Green Setting (Gmax), s		38.4			14.3	* 17		12.8				
Max Q Clear Time (g_c+I1), s		6.4			8.2	13.8		9.0				
Green Ext Time (p_c), s		0.9			0.1	0.9		0.4				

Intersection Summary			
HCM 6th Ctrl Delay			24.0
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	111	203	526	505
Demand Flow Rate, veh/h	114	206	532	517
Vehicles Circulating, veh/h	491	578	178	120
Vehicles Exiting, veh/h	146	132	427	664
Ped Vol Crossing Leg, #/h	14	7	7	3
Ped Cap Adj	0.998	0.999	0.999	1.000
Approach Delay, s/veh	5.8	7.9	8.2	7.3
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	114	206	532	517
Cap Entry Lane, veh/h	836	765	1151	1221
Entry HV Adj Factor	0.974	0.984	0.988	0.976
Flow Entry, veh/h	111	203	526	505
Cap Entry, veh/h	813	752	1136	1192
V/C Ratio	0.137	0.269	0.463	0.424
Control Delay, s/veh	5.8	7.9	8.2	7.3
LOS	A	A	A	A
95th %tile Queue, veh	0	1	3	2

Intersection	
Intersection Delay, s/veh	22.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	201	81	45	318	27	63	55	13	78	68	62
Future Vol, veh/h	56	201	81	45	318	27	63	55	13	78	68	62
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	242	98	54	383	33	76	66	16	94	82	75
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	18.7	30.8	14.6	19.2
HCM LOS	C	D	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	53%	0%	22%	0%	100%	1%	38%
Vol Thru, %	47%	0%	78%	0%	0%	91%	33%
Vol Right, %	0%	100%	0%	100%	0%	8%	30%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	118	13	257	81	41	350	208
LT Vol	63	0	56	0	41	5	78
Through Vol	55	0	201	0	0	318	68
RT Vol	0	13	0	81	0	27	62
Lane Flow Rate	142	16	310	98	49	421	251
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.327	0.032	0.623	0.174	0.101	0.81	0.532
Departure Headway (Hd)	8.281	7.284	7.238	6.407	7.484	6.923	7.642
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	432	489	499	557	478	522	471
Service Time	6.064	5.066	5.008	4.177	5.249	4.688	5.719
HCM Lane V/C Ratio	0.329	0.033	0.621	0.176	0.103	0.807	0.533
HCM Control Delay	15.1	10.3	21.3	10.5	11.1	33.1	19.2
HCM Lane LOS	C	B	C	B	B	D	C
HCM 95th-tile Q	1.4	0.1	4.2	0.6	0.3	7.8	3.1

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

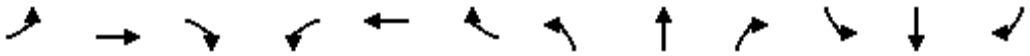
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	22	13	6	60	34	10	89	1	16	155	104
Future Vol, veh/h	50	22	13	6	60	34	10	89	1	16	155	104
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	0	4	7	0	0	0	0	3	0	0	2	2
Mvmt Flow	64	28	17	8	77	44	13	114	1	21	199	133
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	9.1	9	10.9
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	59%	6%	6%
Vol Thru, %	89%	26%	60%	56%
Vol Right, %	1%	15%	34%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	85	100	275
LT Vol	10	50	6	16
Through Vol	89	22	60	155
RT Vol	1	13	34	104
Lane Flow Rate	128	109	128	353
Geometry Grp	1	1	1	1
Degree of Util (X)	0.175	0.157	0.176	0.435
Departure Headway (Hd)	4.917	5.196	4.955	4.441
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	724	684	717	807
Service Time	2.985	3.275	3.033	2.492
HCM Lane V/C Ratio	0.177	0.159	0.179	0.437
HCM Control Delay	9	9.3	9.1	10.9
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	0.6	0.6	0.6	2.2

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing Mid
11/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	125	3	225	343	449	0	0	671	353
Future Volume (veh/h)	0	0	0	125	3	225	343	449	0	0	671	353
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1885	1885	1885	1885	1885	0	0	1885	1885
Adj Flow Rate, veh/h				130	3	234	357	468	0	0	699	368
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				1	1	1	1	1	0	0	1	1
Cap, veh/h				310	3	273	615	2560	0	0	699	368
Arrive On Green				0.17	0.17	0.17	0.34	0.71	0.00	0.00	0.31	0.31
Sat Flow, veh/h				1795	20	1580	1795	3676	0	0	2330	1176
Grp Volume(v), veh/h				130	0	237	357	468	0	0	560	507
Grp Sat Flow(s),veh/h/ln				1795	0	1601	1795	1791	0	0	1791	1621
Q Serve(g_s), s				5.0	0.0	11.2	12.7	3.3	0.0	0.0	24.4	24.4
Cycle Q Clear(g_c), s				5.0	0.0	11.2	12.7	3.3	0.0	0.0	24.4	24.4
Prop In Lane				1.00		0.99	1.00		0.00	0.00		0.73
Lane Grp Cap(c), veh/h				310	0	276	615	2560	0	0	560	507
V/C Ratio(X)				0.42	0.00	0.86	0.58	0.18	0.00	0.00	1.00	1.00
Avail Cap(c_a), veh/h				364	0	324	615	2560	0	0	560	507
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.80	0.80	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				28.8	0.0	31.3	21.0	3.7	0.0	0.0	26.8	26.8
Incr Delay (d2), s/veh				0.3	0.0	15.9	0.7	0.1	0.0	0.0	37.8	40.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.1	0.0	5.3	5.3	1.0	0.0	0.0	15.8	14.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				29.1	0.0	47.2	21.8	3.8	0.0	0.0	64.6	66.9
LnGrp LOS				C	A	D	C	A	A	A	E	F
Approach Vol, veh/h					367			825			1067	
Approach Delay, s/veh					40.8			11.6			65.7	
Approach LOS					D			B			E	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	31.3	29.0		17.7		60.3						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	22.3	* 24		* 16		53.4						
Max Q Clear Time (g_c+I1), s	14.7	26.4		13.2		5.3						
Green Ext Time (p_c), s	0.1	0.0		0.3		1.4						

Intersection Summary		
HCM 6th Ctrl Delay		41.9
HCM 6th LOS		D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	97	291	0	0	0	0	555	127	290	498	0
Future Volume (veh/h)	204	97	291	0	0	0	0	555	127	290	498	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885				0	1885	1885	1885	1885	0
Adj Flow Rate, veh/h	183	240	230				0	603	138	315	541	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1				0	1	1	1	1	0
Cap, veh/h	313	329	279				0	865	197	635	2553	0
Arrive On Green	0.17	0.17	0.17				0.00	0.30	0.30	0.47	0.95	0.00
Sat Flow, veh/h	1795	1885	1598				0	2978	658	1795	3676	0
Grp Volume(v), veh/h	183	240	230				0	374	367	315	541	0
Grp Sat Flow(s),veh/h/ln	1795	1885	1598				0	1791	1751	1795	1791	0
Q Serve(g_s), s	7.3	9.4	10.8				0.0	14.4	14.5	9.5	0.8	0.0
Cycle Q Clear(g_c), s	7.3	9.4	10.8				0.0	14.4	14.5	9.5	0.8	0.0
Prop In Lane	1.00		1.00				0.00		0.38	1.00		0.00
Lane Grp Cap(c), veh/h	313	329	279				0	537	525	635	2553	0
V/C Ratio(X)	0.58	0.73	0.83				0.00	0.70	0.70	0.50	0.21	0.00
Avail Cap(c_a), veh/h	479	503	426				0	537	525	635	2553	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	0.56	0.56	0.00
Uniform Delay (d), s/veh	29.6	30.5	31.1				0.0	24.2	24.2	15.8	0.6	0.0
Incr Delay (d2), s/veh	0.6	1.2	4.4				0.0	7.3	7.5	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	4.2	4.3				0.0	7.0	6.9	3.4	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.2	31.6	35.5				0.0	31.4	31.7	16.0	0.7	0.0
LnGrp LOS	C	C	D				A	C	C	B	A	A
Approach Vol, veh/h		653						741			856	
Approach Delay, s/veh		32.6						31.6			6.3	
Approach LOS		C						C			A	

Timer - Assigned Phs	2		5	6		8
Phs Duration (G+Y+Rc), s	60.2		32.2	28.0		17.8
Change Period (Y+Rc), s	4.6		4.6	* 4.6		4.2
Max Green Setting (Gmax), s	48.4		18.3	* 23		20.8
Max Q Clear Time (g_c+I1), s	2.8		11.5	16.5		12.8
Green Ext Time (p_c), s	1.6		0.1	1.3		0.8

Intersection Summary	
HCM 6th Ctrl Delay	22.3
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	209	161	540	706
Demand Flow Rate, veh/h	211	162	545	713
Vehicles Circulating, veh/h	670	603	273	113
Vehicles Exiting, veh/h	156	215	608	652
Ped Vol Crossing Leg, #/h	9	10	24	8
Ped Cap Adj	0.999	0.999	0.997	0.999
Approach Delay, s/veh	9.0	7.3	9.9	9.9
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	211	162	545	713
Cap Entry Lane, veh/h	697	746	1045	1230
Entry HV Adj Factor	0.988	0.992	0.990	0.990
Flow Entry, veh/h	209	161	540	706
Cap Entry, veh/h	688	739	1031	1216
V/C Ratio	0.303	0.217	0.523	0.580
Control Delay, s/veh	9.0	7.3	9.9	9.9
LOS	A	A	A	A
95th %tile Queue, veh	1	1	3	4

Intersection	
Intersection Delay, s/veh	22.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	306	136	33	266	35	118	73	18	52	63	80
Future Vol, veh/h	59	306	136	33	266	35	118	73	18	52	63	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	333	148	36	289	38	128	79	20	57	68	87
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	26.7	22.8	17.7	17.7
HCM LOS	D	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	62%	0%	16%	0%	100%	1%	27%
Vol Thru, %	38%	0%	84%	0%	0%	87%	32%
Vol Right, %	0%	100%	0%	100%	0%	12%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	191	18	365	136	30	304	195
LT Vol	118	0	59	0	30	3	52
Through Vol	73	0	306	0	0	266	63
RT Vol	0	18	0	136	0	35	80
Lane Flow Rate	208	20	397	148	32	331	212
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.477	0.039	0.793	0.263	0.071	0.671	0.465
Departure Headway (Hd)	8.27	7.231	7.199	6.397	7.894	7.302	7.893
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	434	492	500	559	452	493	454
Service Time	6.056	5.016	4.977	4.174	5.676	5.084	5.985
HCM Lane V/C Ratio	0.479	0.041	0.794	0.265	0.071	0.671	0.467
HCM Control Delay	18.4	10.3	32.4	11.5	11.3	23.9	17.7
HCM Lane LOS	C	B	D	B	B	C	C
HCM 95th-tile Q	2.5	0.1	7.3	1	0.2	4.9	2.4

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

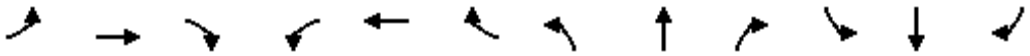
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Future Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	138	55	26	3	41	17	26	97	7	23	86	74
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	8.2	8.9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	63%	5%	13%
Vol Thru, %	74%	25%	67%	47%
Vol Right, %	6%	12%	28%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	208	58	174
LT Vol	25	131	3	22
Through Vol	92	52	39	82
RT Vol	7	25	16	70
Lane Flow Rate	131	219	61	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.174	0.289	0.081	0.23
Departure Headway (Hd)	4.8	4.757	4.753	4.524
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	744	753	749	791
Service Time	2.849	2.803	2.81	2.568
HCM Lane V/C Ratio	0.176	0.291	0.081	0.231
HCM Control Delay	8.9	9.7	8.2	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	1.2	0.3	0.9

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing
11/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	92	2	236	291	374	0	0	648	287
Future Volume (veh/h)	0	0	0	92	2	236	291	374	0	0	648	287
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1885	1885	1900	0	0	1885	1900
Adj Flow Rate, veh/h				96	2	246	303	390	0	0	675	299
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				0	0	1	1	0	0	0	1	0
Cap, veh/h				322	2	284	606	2561	0	0	744	330
Arrive On Green				0.18	0.18	0.18	0.34	0.71	0.00	0.00	0.31	0.31
Sat Flow, veh/h				1810	13	1599	1795	3705	0	0	2473	1054
Grp Volume(v), veh/h				96	0	248	303	390	0	0	508	466
Grp Sat Flow(s),veh/h/ln				1810	0	1612	1795	1805	0	0	1791	1642
Q Serve(g_s), s				3.6	0.0	11.7	10.5	2.7	0.0	0.0	21.2	21.2
Cycle Q Clear(g_c), s				3.6	0.0	11.7	10.5	2.7	0.0	0.0	21.2	21.2
Prop In Lane				1.00		0.99	1.00		0.00	0.00		0.64
Lane Grp Cap(c), veh/h				322	0	287	606	2561	0	0	560	514
V/C Ratio(X)				0.30	0.00	0.87	0.50	0.15	0.00	0.00	0.91	0.91
Avail Cap(c_a), veh/h				367	0	327	606	2561	0	0	560	514
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.85	0.85	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				27.8	0.0	31.2	20.6	3.7	0.0	0.0	25.7	25.7
Incr Delay (d2), s/veh				0.2	0.0	17.5	0.2	0.1	0.0	0.0	20.9	22.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.5	0.0	5.7	4.3	0.8	0.0	0.0	11.9	11.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				28.0	0.0	48.7	20.8	3.8	0.0	0.0	46.6	48.0
LnGrp LOS				C	A	D	C	A	A	A	D	D
Approach Vol, veh/h					344			693			974	
Approach Delay, s/veh					42.9			11.2			47.3	
Approach LOS					D			B			D	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	30.9	29.0		18.1		59.9						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	22.3	* 24		* 16		53.4						
Max Q Clear Time (g_c+I1), s	12.5	23.2		13.7		4.7						
Green Ext Time (p_c), s	0.1	0.5		0.2		1.1						

Intersection Summary		
HCM 6th Ctrl Delay		34.1
HCM 6th LOS		C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Bay Ave & Hwy 1 SB Off-Ramp

Existing
11/28/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	155	325	0	0	0	0	465	132	317	454	0
Future Volume (veh/h)	185	155	325	0	0	0	0	465	132	317	454	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885				0	1885	1900	1885	1900	0
Adj Flow Rate, veh/h	192	268	269				0	511	145	348	499	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	1				0	1	0	1	0	0
Cap, veh/h	358	376	316				0	819	231	593	2488	0
Arrive On Green	0.20	0.20	0.20				0.00	0.30	0.30	0.44	0.92	0.00
Sat Flow, veh/h	1810	1900	1598				0	2825	770	1795	3705	0
Grp Volume(v), veh/h	192	268	269				0	334	322	348	499	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1598				0	1791	1710	1795	1805	0
Q Serve(g_s), s	7.4	10.3	12.7				0.0	12.5	12.7	11.4	1.1	0.0
Cycle Q Clear(g_c), s	7.4	10.3	12.7				0.0	12.5	12.7	11.4	1.1	0.0
Prop In Lane	1.00		1.00				0.00		0.45	1.00		0.00
Lane Grp Cap(c), veh/h	358	376	316				0	537	513	593	2488	0
V/C Ratio(X)	0.54	0.71	0.85				0.00	0.62	0.63	0.59	0.20	0.00
Avail Cap(c_a), veh/h	483	507	426				0	537	513	593	2488	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.33	1.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	0.70	0.70	0.00
Uniform Delay (d), s/veh	28.1	29.2	30.2				0.0	23.5	23.5	17.9	1.1	0.0
Incr Delay (d2), s/veh	0.5	1.6	9.2				0.0	5.3	5.7	0.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	4.6	5.4				0.0	5.9	5.8	4.2	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.5	30.8	39.3				0.0	28.8	29.3	18.6	1.2	0.0
LnGrp LOS	C	C	D				A	C	C	B	A	A
Approach Vol, veh/h		729						656			847	
Approach Delay, s/veh		33.3						29.0			8.3	
Approach LOS		C						C			A	

Timer - Assigned Phs	2		5	6		8
Phs Duration (G+Y+Rc), s	58.4		30.4	28.0		19.6
Change Period (Y+Rc), s	4.6		4.6	* 4.6		4.2
Max Green Setting (Gmax), s	48.4		18.3	* 23		20.8
Max Q Clear Time (g_c+I1), s	3.1		13.4	14.7		14.7
Green Ext Time (p_c), s	1.5		0.1	1.3		0.8

Intersection Summary	
HCM 6th Ctrl Delay	22.6
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	217	157	401	657
Demand Flow Rate, veh/h	217	157	401	658
Vehicles Circulating, veh/h	627	478	293	160
Vehicles Exiting, veh/h	191	216	551	475
Ped Vol Crossing Leg, #/h	8	10	17	17
Ped Cap Adj	0.999	0.999	0.998	0.998
Approach Delay, s/veh	8.5	6.1	7.8	9.8
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	217	157	401	658
Cap Entry Lane, veh/h	728	847	1023	1172
Entry HV Adj Factor	1.000	1.000	1.000	0.998
Flow Entry, veh/h	217	157	401	657
Cap Entry, veh/h	727	846	1021	1168
V/C Ratio	0.298	0.186	0.393	0.563
Control Delay, s/veh	8.5	6.1	7.8	9.8
LOS	A	A	A	A
95th %tile Queue, veh	1	1	2	4

Intersection	
Intersection Delay, s/veh	15.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	72	281	125	23	242	24	100	78	25	41	48	62
Future Vol, veh/h	72	281	125	23	242	24	100	78	25	41	48	62
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	73	287	128	23	247	24	102	80	26	42	49	63
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	17.8	15.5	14	13.3
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	56%	0%	20%	0%	100%	1%	27%
Vol Thru, %	44%	0%	80%	0%	0%	90%	32%
Vol Right, %	0%	100%	0%	100%	0%	9%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	25	353	125	21	268	151
LT Vol	100	0	72	0	21	2	41
Through Vol	78	0	281	0	0	242	48
RT Vol	0	25	0	125	0	24	62
Lane Flow Rate	182	26	360	128	21	274	154
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.376	0.046	0.651	0.202	0.042	0.504	0.306
Departure Headway (Hd)	7.448	6.446	6.51	5.693	7.193	6.623	7.152
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	483	555	558	633	500	548	502
Service Time	5.194	4.191	4.221	3.404	4.907	4.337	5.201
HCM Lane V/C Ratio	0.377	0.047	0.645	0.202	0.042	0.5	0.307
HCM Control Delay	14.6	9.5	20.6	9.8	10.2	15.9	13.3
HCM Lane LOS	B	A	C	A	B	C	B
HCM 95th-tile Q	1.7	0.1	4.7	0.8	0.1	2.8	1.3

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

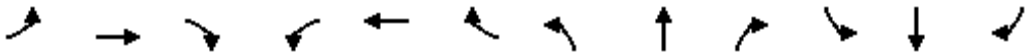
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Future Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	138	55	26	3	41	17	26	97	7	23	86	74
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	8.2	8.9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	63%	5%	13%
Vol Thru, %	74%	25%	67%	47%
Vol Right, %	6%	12%	28%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	208	58	174
LT Vol	25	131	3	22
Through Vol	92	52	39	82
RT Vol	7	25	16	70
Lane Flow Rate	131	219	61	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.174	0.289	0.081	0.23
Departure Headway (Hd)	4.8	4.757	4.753	4.524
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	744	753	749	791
Service Time	2.849	2.803	2.81	2.568
HCM Lane V/C Ratio	0.176	0.291	0.081	0.231
HCM Control Delay	8.9	9.7	8.2	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	1.2	0.3	0.9

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing
11/29/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	69	3	139	390	538	0	0	407	474
Future Volume (veh/h)	0	0	0	69	3	139	390	538	0	0	407	474
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.93
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1826	1900	1885	1885	1856	0	0	1870	1885
Adj Flow Rate, veh/h				73	3	146	411	566	0	0	428	499
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				5	0	1	1	3	0	0	2	1
Cap, veh/h				214	4	195	742	2574	0	0	426	353
Arrive On Green				0.12	0.12	0.12	0.41	0.73	0.00	0.00	0.24	0.24
Sat Flow, veh/h				1739	33	1583	1795	3618	0	0	1870	1469
Grp Volume(v), veh/h				73	0	149	411	566	0	0	428	499
Grp Sat Flow(s),veh/h/ln				1739	0	1615	1795	1763	0	0	1777	1469
Q Serve(g_s), s				2.3	0.0	5.3	10.4	3.1	0.0	0.0	14.4	14.4
Cycle Q Clear(g_c), s				2.3	0.0	5.3	10.4	3.1	0.0	0.0	14.4	14.4
Prop In Lane				1.00		0.98	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				214	0	199	742	2574	0	0	426	353
V/C Ratio(X)				0.34	0.00	0.75	0.55	0.22	0.00	0.00	1.00	1.42
Avail Cap(c_a), veh/h				371	0	345	742	2574	0	0	426	353
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.68	0.68	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				24.1	0.0	25.4	13.4	2.6	0.0	0.0	22.8	22.8
Incr Delay (d2), s/veh				0.3	0.0	2.1	0.4	0.1	0.0	0.0	44.5	202.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.9	0.0	2.0	3.9	0.7	0.0	0.0	10.9	24.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.4	0.0	27.5	13.7	2.7	0.0	0.0	67.3	225.6
LnGrp LOS				C	A	C	B	A	A	A	F	F
Approach Vol, veh/h					222			977			927	
Approach Delay, s/veh					26.5			7.4			152.5	
Approach LOS					C			A			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	29.4	19.0		11.6		48.4						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	17.3	* 14		* 13		38.4						
Max Q Clear Time (g_c+I1), s	12.4	16.4		7.3		5.1						
Green Ext Time (p_c), s	0.1	0.0		0.2		1.7						

Intersection Summary		
HCM 6th Ctrl Delay		72.7
HCM 6th LOS		E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Bay Ave & Hwy 1 SB Off-Ramp

Existing
11/29/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	317	0	263	0	0	0	0	604	125	188	308	0
Future Volume (veh/h)	317	0	263	0	0	0	0	604	125	188	308	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	1900	1856				0	1885	1856	1870	1856	0
Adj Flow Rate, veh/h	420	0	185				0	636	132	198	324	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	0	3				0	1	3	2	3	0
Cap, veh/h	542	0	245				0	852	176	589	2459	0
Arrive On Green	0.16	0.00	0.16				0.00	0.29	0.29	0.11	0.23	0.00
Sat Flow, veh/h	3478	0	1572				0	3031	608	1781	3618	0
Grp Volume(v), veh/h	420	0	185				0	387	381	198	324	0
Grp Sat Flow(s),veh/h/ln	1739	0	1572				0	1791	1754	1781	1763	0
Q Serve(g_s), s	7.0	0.0	6.8				0.0	11.8	11.8	6.2	4.4	0.0
Cycle Q Clear(g_c), s	7.0	0.0	6.8				0.0	11.8	11.8	6.2	4.4	0.0
Prop In Lane	1.00		1.00				0.00		0.35	1.00		0.00
Lane Grp Cap(c), veh/h	542	0	245				0	519	509	589	2459	0
V/C Ratio(X)	0.78	0.00	0.76				0.00	0.75	0.75	0.34	0.13	0.00
Avail Cap(c_a), veh/h	742	0	335				0	519	509	589	2459	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.75	0.75	0.00
Uniform Delay (d), s/veh	24.3	0.0	24.2				0.0	19.3	19.3	20.6	8.7	0.0
Incr Delay (d2), s/veh	2.3	0.0	3.8				0.0	9.4	9.7	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	2.6				0.0	5.9	5.8	2.6	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	28.1				0.0	28.7	29.0	20.7	8.8	0.0
LnGrp LOS	C	A	C				A	C	C	C	A	A
Approach Vol, veh/h		605						768			522	
Approach Delay, s/veh		27.0						28.9			13.3	
Approach LOS		C						C			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		46.5			24.5	22.0		13.5				
Change Period (Y+Rc), s		4.6			4.6	* 4.6		4.2				
Max Green Setting (Gmax), s		38.4			14.3	* 17		12.8				
Max Q Clear Time (g_c+I1), s		6.4			8.2	13.8		9.0				
Green Ext Time (p_c), s		0.9			0.1	0.9		0.4				

Intersection Summary			
HCM 6th Ctrl Delay			24.0
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	24.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	51	17	30	7	38	134	59	392	12	86	329	29
Future Vol, veh/h	51	17	30	7	38	134	59	392	12	86	329	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	6	0	0	0	3	1	2	1	9	0	3	3
Mvmt Flow	58	19	34	8	43	152	67	445	14	98	374	33
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	12.4	15.4	31.9	23.8
HCM LOS	B	C	D	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	75%	0%	4%	100%	0%
Vol Thru, %	0%	97%	25%	0%	21%	0%	92%
Vol Right, %	0%	3%	0%	100%	75%	0%	8%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	59	404	68	30	179	86	358
LT Vol	59	0	51	0	7	86	0
Through Vol	0	392	17	0	38	0	329
RT Vol	0	12	0	30	134	0	29
Lane Flow Rate	67	459	77	34	203	98	407
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.133	0.84	0.183	0.069	0.413	0.194	0.749
Departure Headway (Hd)	7.138	6.589	8.545	7.331	7.302	7.147	6.63
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	502	551	420	487	492	502	545
Service Time	4.882	4.333	6.305	5.09	5.35	4.892	4.375
HCM Lane V/C Ratio	0.133	0.833	0.183	0.07	0.413	0.195	0.747
HCM Control Delay	11	35	13.2	10.6	15.4	11.6	26.7
HCM Lane LOS	B	D	B	B	C	B	D
HCM 95th-tile Q	0.5	8.7	0.7	0.2	2	0.7	6.5

Intersection	
Intersection Delay, s/veh	22.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	201	81	45	318	27	63	55	13	78	68	62
Future Vol, veh/h	56	201	81	45	318	27	63	55	13	78	68	62
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	242	98	54	383	33	76	66	16	94	82	75
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	18.7	30.8	14.6	19.2
HCM LOS	C	D	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	53%	0%	22%	0%	100%	1%	38%
Vol Thru, %	47%	0%	78%	0%	0%	91%	33%
Vol Right, %	0%	100%	0%	100%	0%	8%	30%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	118	13	257	81	41	350	208
LT Vol	63	0	56	0	41	5	78
Through Vol	55	0	201	0	0	318	68
RT Vol	0	13	0	81	0	27	62
Lane Flow Rate	142	16	310	98	49	421	251
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.327	0.032	0.623	0.174	0.101	0.81	0.532
Departure Headway (Hd)	8.281	7.284	7.238	6.407	7.484	6.923	7.642
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	432	489	499	557	478	522	471
Service Time	6.064	5.066	5.008	4.177	5.249	4.688	5.719
HCM Lane V/C Ratio	0.329	0.033	0.621	0.176	0.103	0.807	0.533
HCM Control Delay	15.1	10.3	21.3	10.5	11.1	33.1	19.2
HCM Lane LOS	C	B	C	B	B	D	C
HCM 95th-tile Q	1.4	0.1	4.2	0.6	0.3	7.8	3.1

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

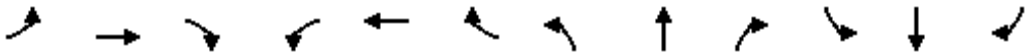
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	22	13	6	60	34	10	89	1	16	155	104
Future Vol, veh/h	50	22	13	6	60	34	10	89	1	16	155	104
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	0	4	7	0	0	0	0	3	0	0	2	2
Mvmt Flow	64	28	17	8	77	44	13	114	1	21	199	133
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	9.1	9	10.9
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	59%	6%	6%
Vol Thru, %	89%	26%	60%	56%
Vol Right, %	1%	15%	34%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	85	100	275
LT Vol	10	50	6	16
Through Vol	89	22	60	155
RT Vol	1	13	34	104
Lane Flow Rate	128	109	128	353
Geometry Grp	1	1	1	1
Degree of Util (X)	0.175	0.157	0.176	0.435
Departure Headway (Hd)	4.917	5.196	4.955	4.441
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	724	684	717	807
Service Time	2.985	3.275	3.033	2.492
HCM Lane V/C Ratio	0.177	0.159	0.179	0.437
HCM Control Delay	9	9.3	9.1	10.9
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	0.6	0.6	0.6	2.2

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing Mid
11/29/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	125	3	225	343	449	0	0	671	353
Future Volume (veh/h)	0	0	0	125	3	225	343	449	0	0	671	353
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1885	1885	1885	1885	1885	0	0	1885	1885
Adj Flow Rate, veh/h				130	3	234	357	468	0	0	699	368
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				1	1	1	1	1	0	0	1	1
Cap, veh/h				322	4	283	642	2414	0	0	534	281
Arrive On Green				0.18	0.18	0.18	0.36	0.67	0.00	0.00	0.24	0.24
Sat Flow, veh/h				1795	20	1580	1795	3676	0	0	2320	1170
Grp Volume(v), veh/h				130	0	237	357	468	0	0	562	505
Grp Sat Flow(s),veh/h/ln				1795	0	1601	1795	1791	0	0	1791	1605
Q Serve(g_s), s				3.8	0.0	8.6	9.6	2.9	0.0	0.0	14.4	14.4
Cycle Q Clear(g_c), s				3.8	0.0	8.6	9.6	2.9	0.0	0.0	14.4	14.4
Prop In Lane				1.00		0.99	1.00		0.00	0.00		0.73
Lane Grp Cap(c), veh/h				322	0	287	642	2414	0	0	430	385
V/C Ratio(X)				0.40	0.00	0.83	0.56	0.19	0.00	0.00	1.31	1.31
Avail Cap(c_a), veh/h				383	0	341	642	2414	0	0	430	385
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.72	0.72	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				21.8	0.0	23.7	15.5	3.7	0.0	0.0	22.8	22.8
Incr Delay (d2), s/veh				0.3	0.0	11.4	0.5	0.1	0.0	0.0	154.7	157.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.5	0.0	3.8	3.7	0.8	0.0	0.0	24.1	21.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				22.1	0.0	35.1	15.9	3.8	0.0	0.0	177.5	179.9
LnGrp LOS				C	A	D	B	A	A	A	F	F
Approach Vol, veh/h					367			825			1067	
Approach Delay, s/veh					30.5			9.0			178.6	
Approach LOS					C			A			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	26.0	19.0		15.0		45.0						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	17.3	* 14		* 13		38.4						
Max Q Clear Time (g_c+I1), s	11.6	16.4		10.6		4.9						
Green Ext Time (p_c), s	0.1	0.0		0.2		1.4						

Intersection Summary		
HCM 6th Ctrl Delay		92.6
HCM 6th LOS		F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	97	291	0	0	0	0	555	127	290	498	0
Future Volume (veh/h)	204	97	291	0	0	0	0	555	127	290	498	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885				0	1885	1885	1885	1885	0
Adj Flow Rate, veh/h	183	240	230				0	603	138	315	541	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1				0	1	1	1	1	0
Cap, veh/h	319	335	284				0	836	191	554	2419	0
Arrive On Green	0.18	0.18	0.18				0.00	0.29	0.29	0.10	0.22	0.00
Sat Flow, veh/h	1795	1885	1598				0	2977	658	1795	3676	0
Grp Volume(v), veh/h	183	240	230				0	374	367	315	541	0
Grp Sat Flow(s),veh/h/ln	1795	1885	1598				0	1791	1750	1795	1791	0
Q Serve(g_s), s	5.6	7.2	8.3				0.0	11.2	11.3	10.0	7.4	0.0
Cycle Q Clear(g_c), s	5.6	7.2	8.3				0.0	11.2	11.3	10.0	7.4	0.0
Prop In Lane	1.00		1.00				0.00		0.38	1.00		0.00
Lane Grp Cap(c), veh/h	319	335	284				0	519	508	554	2419	0
V/C Ratio(X)	0.57	0.72	0.81				0.00	0.72	0.72	0.57	0.22	0.00
Avail Cap(c_a), veh/h	383	402	341				0	519	508	554	2419	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	0.34	0.34	0.00
Uniform Delay (d), s/veh	22.6	23.2	23.7				0.0	19.1	19.1	23.1	10.4	0.0
Incr Delay (d2), s/veh	0.6	3.4	9.7				0.0	8.4	8.7	0.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.2	3.6				0.0	5.5	5.5	4.7	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.2	26.6	33.4				0.0	27.5	27.8	23.4	10.5	0.0
LnGrp LOS	C	C	C				A	C	C	C	B	A
Approach Vol, veh/h		653						741			856	
Approach Delay, s/veh		28.0						27.6			15.3	
Approach LOS		C						C			B	

Timer - Assigned Phs	2		5	6		8
Phs Duration (G+Y+Rc), s	45.1		23.1	22.0		14.9
Change Period (Y+Rc), s	4.6		4.6	* 4.6		4.2
Max Green Setting (Gmax), s	38.4		14.3	* 17		12.8
Max Q Clear Time (g_c+I1), s	9.4		12.0	13.3		10.3
Green Ext Time (p_c), s	1.6		0.1	0.9		0.4

Intersection Summary	
HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	55.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	45	68	15	25	104	60	402	23	124	458	53
Future Vol, veh/h	75	45	68	15	25	104	60	402	23	124	458	53
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	83	50	76	17	28	116	67	447	26	138	509	59
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	14.6	16.3	47.9	81.9
HCM LOS	B	C	E	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	62%	0%	10%	100%	0%
Vol Thru, %	0%	95%	38%	0%	17%	0%	90%
Vol Right, %	0%	5%	0%	100%	72%	0%	10%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	60	425	120	68	144	124	511
LT Vol	60	0	75	0	15	124	0
Through Vol	0	402	45	0	25	0	458
RT Vol	0	23	0	68	104	0	53
Lane Flow Rate	67	472	133	76	160	138	568
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.142	0.935	0.321	0.16	0.363	0.292	1.109
Departure Headway (Hd)	7.917	7.364	9.006	7.955	8.519	7.617	7.029
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	456	496	401	453	426	473	517
Service Time	5.617	5.064	6.706	5.655	6.519	5.356	4.768
HCM Lane V/C Ratio	0.147	0.952	0.332	0.168	0.376	0.292	1.099
HCM Control Delay	11.9	53	15.9	12.2	16.3	13.5	98.5
HCM Lane LOS	B	F	C	B	C	B	F
HCM 95th-tile Q	0.5	11.3	1.4	0.6	1.6	1.2	18.4

Intersection	
Intersection Delay, s/veh	22.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	306	136	33	266	35	118	73	18	52	63	80
Future Vol, veh/h	59	306	136	33	266	35	118	73	18	52	63	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	333	148	36	289	38	128	79	20	57	68	87
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	26.7	22.8	17.7	17.7
HCM LOS	D	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	62%	0%	16%	0%	100%	1%	27%
Vol Thru, %	38%	0%	84%	0%	0%	87%	32%
Vol Right, %	0%	100%	0%	100%	0%	12%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	191	18	365	136	30	304	195
LT Vol	118	0	59	0	30	3	52
Through Vol	73	0	306	0	0	266	63
RT Vol	0	18	0	136	0	35	80
Lane Flow Rate	208	20	397	148	32	331	212
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.477	0.039	0.793	0.263	0.071	0.671	0.465
Departure Headway (Hd)	8.27	7.231	7.199	6.397	7.894	7.302	7.893
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	434	492	500	559	452	493	454
Service Time	6.056	5.016	4.977	4.174	5.676	5.084	5.985
HCM Lane V/C Ratio	0.479	0.041	0.794	0.265	0.071	0.671	0.467
HCM Control Delay	18.4	10.3	32.4	11.5	11.3	23.9	17.7
HCM Lane LOS	C	B	D	B	B	C	C
HCM 95th-tile Q	2.5	0.1	7.3	1	0.2	4.9	2.4

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

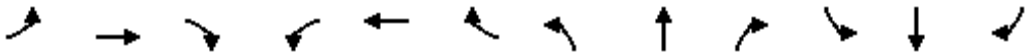
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Future Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	138	55	26	3	41	17	26	97	7	23	86	74
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	8.2	8.9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	63%	5%	13%
Vol Thru, %	74%	25%	67%	47%
Vol Right, %	6%	12%	28%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	208	58	174
LT Vol	25	131	3	22
Through Vol	92	52	39	82
RT Vol	7	25	16	70
Lane Flow Rate	131	219	61	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.174	0.289	0.081	0.23
Departure Headway (Hd)	4.8	4.757	4.753	4.524
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	744	753	749	791
Service Time	2.849	2.803	2.81	2.568
HCM Lane V/C Ratio	0.176	0.291	0.081	0.231
HCM Control Delay	8.9	9.7	8.2	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	1.2	0.3	0.9

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing
11/29/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	92	2	236	291	374	0	0	648	287
Future Volume (veh/h)	0	0	0	92	2	236	291	374	0	0	648	287
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1885	1885	1900	0	0	1885	1900
Adj Flow Rate, veh/h				96	2	246	303	390	0	0	675	299
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				0	0	1	1	0	0	0	1	0
Cap, veh/h				333	2	295	633	2416	0	0	570	252
Arrive On Green				0.18	0.18	0.18	0.35	0.67	0.00	0.00	0.24	0.24
Sat Flow, veh/h				1810	13	1599	1795	3705	0	0	2468	1051
Grp Volume(v), veh/h				96	0	248	303	390	0	0	509	465
Grp Sat Flow(s),veh/h/ln				1810	0	1612	1795	1805	0	0	1791	1634
Q Serve(g_s), s				2.7	0.0	8.9	7.9	2.4	0.0	0.0	14.4	14.4
Cycle Q Clear(g_c), s				2.7	0.0	8.9	7.9	2.4	0.0	0.0	14.4	14.4
Prop In Lane				1.00		0.99	1.00		0.00	0.00		0.64
Lane Grp Cap(c), veh/h				333	0	297	633	2416	0	0	430	392
V/C Ratio(X)				0.29	0.00	0.84	0.48	0.16	0.00	0.00	1.18	1.18
Avail Cap(c_a), veh/h				386	0	344	633	2416	0	0	430	392
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.79	0.79	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				21.1	0.0	23.6	15.1	3.7	0.0	0.0	22.8	22.8
Incr Delay (d2), s/veh				0.2	0.0	12.8	0.2	0.1	0.0	0.0	104.6	106.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.1	0.0	4.1	3.0	0.7	0.0	0.0	18.1	16.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				21.3	0.0	36.3	15.3	3.8	0.0	0.0	127.4	129.0
LnGrp LOS				C	A	D	B	A	A	A	F	F
Approach Vol, veh/h					344			693			974	
Approach Delay, s/veh					32.1			8.8			128.2	
Approach LOS					C			A			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.7	19.0		15.3		44.7						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	17.3	* 14		* 13		38.4						
Max Q Clear Time (g_c+I1), s	9.9	16.4		10.9		4.4						
Green Ext Time (p_c), s	0.1	0.0		0.2		1.1						

Intersection Summary		
HCM 6th Ctrl Delay		70.6
HCM 6th LOS		E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Bay Ave & Hwy 1 SB Off-Ramp

Existing
11/29/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	155	325	0	0	0	0	465	132	317	454	0
Future Volume (veh/h)	185	155	325	0	0	0	0	465	132	317	454	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885				0	1885	1900	1885	1900	0
Adj Flow Rate, veh/h	192	268	269				0	511	145	348	499	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	1				0	1	0	1	0	0
Cap, veh/h	360	378	318				0	792	223	516	2362	0
Arrive On Green	0.20	0.20	0.20				0.00	0.29	0.29	0.09	0.22	0.00
Sat Flow, veh/h	1810	1900	1598				0	2825	770	1795	3705	0
Grp Volume(v), veh/h	192	268	269				0	334	322	348	499	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1598				0	1791	1709	1795	1805	0
Q Serve(g_s), s	5.7	7.9	9.7				0.0	9.8	9.9	11.2	6.8	0.0
Cycle Q Clear(g_c), s	5.7	7.9	9.7				0.0	9.8	9.9	11.2	6.8	0.0
Prop In Lane	1.00		1.00				0.00		0.45	1.00		0.00
Lane Grp Cap(c), veh/h	360	378	318				0	519	496	516	2362	0
V/C Ratio(X)	0.53	0.71	0.85				0.00	0.64	0.65	0.67	0.21	0.00
Avail Cap(c_a), veh/h	386	405	341				0	519	496	516	2362	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	0.53	0.53	0.00
Uniform Delay (d), s/veh	21.5	22.4	23.1				0.0	18.6	18.6	24.4	10.8	0.0
Incr Delay (d2), s/veh	0.5	4.2	15.5				0.0	6.0	6.5	1.5	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.6	4.7				0.0	4.6	4.5	5.5	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	26.6	38.7				0.0	24.6	25.1	25.9	10.9	0.0
LnGrp LOS	C	C	D				A	C	C	C	B	A
Approach Vol, veh/h		729						656			847	
Approach Delay, s/veh		29.9						24.8			17.1	
Approach LOS		C						C			B	

Timer - Assigned Phs	2		5	6		8
Phs Duration (G+Y+Rc), s	43.9		21.9	22.0		16.1
Change Period (Y+Rc), s	4.6		4.6	* 4.6		4.2
Max Green Setting (Gmax), s	38.4		14.3	* 17		12.8
Max Q Clear Time (g_c+I1), s	8.8		13.2	11.9		11.7
Green Ext Time (p_c), s	1.4		0.0	1.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	23.5
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	26.8
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	89	44	79	23	45	86	89	290	14	154	438	52
Future Vol, veh/h	89	44	79	23	45	86	89	290	14	154	438	52
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	2
Mvmt Flow	91	45	81	23	46	88	91	296	14	157	447	53
Number of Lanes	0	1	1	0	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	1	2
HCM Control Delay	13.5	14.8	18.5	39.1
HCM LOS	B	B	C	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	100%	0%	67%	0%	15%	100%	0%
Vol Thru, %	0%	95%	33%	0%	29%	0%	89%
Vol Right, %	0%	5%	0%	100%	56%	0%	11%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	89	304	133	79	154	154	490
LT Vol	89	0	89	0	23	154	0
Through Vol	0	290	44	0	45	0	438
RT Vol	0	14	0	79	86	0	52
Lane Flow Rate	91	310	136	81	157	157	500
Geometry Grp	7	7	7	7	6	7	7
Degree of Util (X)	0.192	0.609	0.312	0.162	0.34	0.315	0.921
Departure Headway (Hd)	7.61	7.064	8.284	7.219	7.788	7.219	6.632
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	471	512	433	496	460	498	545
Service Time	5.364	4.817	6.042	4.976	5.852	4.969	4.382
HCM Lane V/C Ratio	0.193	0.605	0.314	0.163	0.341	0.315	0.917
HCM Control Delay	12.2	20.3	14.8	11.4	14.8	13.3	47.2
HCM Lane LOS	B	C	B	B	B	B	E
HCM 95th-tile Q	0.7	4	1.3	0.6	1.5	1.3	11.2

Intersection	
Intersection Delay, s/veh	15.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	72	281	125	23	242	24	100	78	25	41	48	62
Future Vol, veh/h	72	281	125	23	242	24	100	78	25	41	48	62
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	73	287	128	23	247	24	102	80	26	42	49	63
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	17.8	15.5	14	13.3
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	56%	0%	20%	0%	100%	1%	27%
Vol Thru, %	44%	0%	80%	0%	0%	90%	32%
Vol Right, %	0%	100%	0%	100%	0%	9%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	25	353	125	21	268	151
LT Vol	100	0	72	0	21	2	41
Through Vol	78	0	281	0	0	242	48
RT Vol	0	25	0	125	0	24	62
Lane Flow Rate	182	26	360	128	21	274	154
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.376	0.046	0.651	0.202	0.042	0.504	0.306
Departure Headway (Hd)	7.448	6.446	6.51	5.693	7.193	6.623	7.152
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	483	555	558	633	500	548	502
Service Time	5.194	4.191	4.221	3.404	4.907	4.337	5.201
HCM Lane V/C Ratio	0.377	0.047	0.645	0.202	0.042	0.5	0.307
HCM Control Delay	14.6	9.5	20.6	9.8	10.2	15.9	13.3
HCM Lane LOS	B	A	C	A	B	C	B
HCM 95th-tile Q	1.7	0.1	4.7	0.8	0.1	2.8	1.3

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

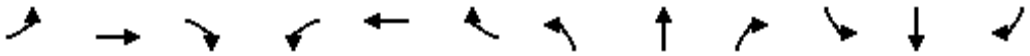
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Future Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	138	55	26	3	41	17	26	97	7	23	86	74
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	8.2	8.9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	63%	5%	13%
Vol Thru, %	74%	25%	67%	47%
Vol Right, %	6%	12%	28%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	208	58	174
LT Vol	25	131	3	22
Through Vol	92	52	39	82
RT Vol	7	25	16	70
Lane Flow Rate	131	219	61	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.174	0.289	0.081	0.23
Departure Headway (Hd)	4.8	4.757	4.753	4.524
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	744	753	749	791
Service Time	2.849	2.803	2.81	2.568
HCM Lane V/C Ratio	0.176	0.291	0.081	0.231
HCM Control Delay	8.9	9.7	8.2	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	1.2	0.3	0.9

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing
11/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	69	3	139	390	538	0	0	407	474
Future Volume (veh/h)	0	0	0	69	3	139	390	538	0	0	407	474
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.93
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1826	1900	1885	1885	1856	0	0	1870	1885
Adj Flow Rate, veh/h				73	3	146	411	566	0	0	428	499
Peak Hour Factor				0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %				5	0	1	1	3	0	0	2	1
Cap, veh/h				214	4	195	742	2574	0	0	426	353
Arrive On Green				0.12	0.12	0.12	0.83	1.00	0.00	0.00	0.24	0.24
Sat Flow, veh/h				1739	33	1583	1795	3618	0	0	1870	1469
Grp Volume(v), veh/h				73	0	149	411	566	0	0	428	499
Grp Sat Flow(s),veh/h/ln				1739	0	1615	1795	1763	0	0	1777	1469
Q Serve(g_s), s				2.3	0.0	5.3	4.4	0.0	0.0	0.0	14.4	14.4
Cycle Q Clear(g_c), s				2.3	0.0	5.3	4.4	0.0	0.0	0.0	14.4	14.4
Prop In Lane				1.00		0.98	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				214	0	199	742	2574	0	0	426	353
V/C Ratio(X)				0.34	0.00	0.75	0.55	0.22	0.00	0.00	1.00	1.42
Avail Cap(c_a), veh/h				371	0	345	742	2574	0	0	426	353
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.68	0.68	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				24.1	0.0	25.4	3.4	0.0	0.0	0.0	22.8	22.8
Incr Delay (d2), s/veh				0.3	0.0	2.1	0.4	0.1	0.0	0.0	44.5	202.8
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.9	0.0	2.0	1.0	0.0	0.0	0.0	10.9	24.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				24.4	0.0	27.5	3.8	0.1	0.0	0.0	67.3	225.6
LnGrp LOS				C	A	C	A	A	A	A	F	F
Approach Vol, veh/h					222			977			927	
Approach Delay, s/veh					26.5			1.7			152.5	
Approach LOS					C			A			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	29.4	19.0		11.6		48.4						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	17.3	* 14		* 13		38.4						
Max Q Clear Time (g_c+I1), s	6.4	16.4		7.3		2.0						
Green Ext Time (p_c), s	0.2	0.0		0.2		1.7						

Intersection Summary		
HCM 6th Ctrl Delay		70.0
HCM 6th LOS		E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Bay Ave & Hwy 1 SB Off-Ramp

Existing
11/28/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	317	0	263	0	0	0	0	604	125	188	308	0
Future Volume (veh/h)	317	0	263	0	0	0	0	604	125	188	308	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1826	1900	1856				0	1885	1856	1870	1856	0
Adj Flow Rate, veh/h	420	0	185				0	636	132	198	324	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	5	0	3				0	1	3	2	3	0
Cap, veh/h	542	0	245				0	852	176	589	2459	0
Arrive On Green	0.16	0.00	0.16				0.00	0.29	0.29	0.11	0.23	0.00
Sat Flow, veh/h	3478	0	1572				0	3031	608	1781	3618	0
Grp Volume(v), veh/h	420	0	185				0	387	381	198	324	0
Grp Sat Flow(s),veh/h/ln	1739	0	1572				0	1791	1754	1781	1763	0
Q Serve(g_s), s	7.0	0.0	6.8				0.0	11.8	11.8	6.2	4.4	0.0
Cycle Q Clear(g_c), s	7.0	0.0	6.8				0.0	11.8	11.8	6.2	4.4	0.0
Prop In Lane	1.00		1.00				0.00		0.35	1.00		0.00
Lane Grp Cap(c), veh/h	542	0	245				0	519	509	589	2459	0
V/C Ratio(X)	0.78	0.00	0.76				0.00	0.75	0.75	0.34	0.13	0.00
Avail Cap(c_a), veh/h	742	0	335				0	519	509	589	2459	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	0.75	0.75	0.00
Uniform Delay (d), s/veh	24.3	0.0	24.2				0.0	19.3	19.3	20.6	8.7	0.0
Incr Delay (d2), s/veh	2.3	0.0	3.8				0.0	9.4	9.7	0.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	2.6				0.0	5.9	5.8	2.6	1.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	28.1				0.0	28.7	29.0	20.7	8.8	0.0
LnGrp LOS	C	A	C				A	C	C	C	A	A
Approach Vol, veh/h		605						768			522	
Approach Delay, s/veh		27.0						28.9			13.3	
Approach LOS		C						C			B	

Timer - Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		46.5			24.5	22.0		13.5				
Change Period (Y+Rc), s		4.6			4.6	* 4.6		4.2				
Max Green Setting (Gmax), s		38.4			14.3	* 17		12.8				
Max Q Clear Time (g_c+I1), s		6.4			8.2	13.8		9.0				
Green Ext Time (p_c), s		0.9			0.1	0.9		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		24.0
HCM 6th LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	16.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	51	17	30	7	38	134	59	392	12	86	329	29
Future Vol, veh/h	51	17	30	7	38	134	59	392	12	86	329	29
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	6	0	0	0	3	1	2	1	9	0	3	3
Mvmt Flow	58	19	34	8	43	152	67	445	14	98	374	33
Number of Lanes	0	1	1	0	1	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	2
HCM Control Delay	13.1	16	17.4	15.4
HCM LOS	B	C	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	75%	0%	4%	100%	0%	0%
Vol Thru, %	0%	100%	92%	25%	0%	21%	0%	100%	79%
Vol Right, %	0%	0%	8%	0%	100%	75%	0%	0%	21%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	59	261	143	68	30	179	86	219	139
LT Vol	59	0	0	51	0	7	86	0	0
Through Vol	0	261	131	17	0	38	0	219	110
RT Vol	0	0	12	0	30	134	0	0	29
Lane Flow Rate	67	297	162	77	34	203	98	249	158
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.146	0.602	0.332	0.193	0.074	0.429	0.213	0.512	0.317
Departure Headway (Hd)	7.827	7.298	7.377	8.986	7.786	7.597	7.851	7.391	7.241
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	457	493	486	398	458	472	456	486	495
Service Time	5.586	5.057	5.136	6.764	5.564	5.362	5.61	5.15	5
HCM Lane V/C Ratio	0.147	0.602	0.333	0.193	0.074	0.43	0.215	0.512	0.319
HCM Control Delay	11.9	20.6	13.8	13.9	11.2	16	12.7	17.7	13.4
HCM Lane LOS	B	C	B	B	B	C	B	C	B
HCM 95th-tile Q	0.5	3.9	1.4	0.7	0.2	2.1	0.8	2.9	1.3

Intersection	
Intersection Delay, s/veh	22.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	56	201	81	45	318	27	63	55	13	78	68	62
Future Vol, veh/h	56	201	81	45	318	27	63	55	13	78	68	62
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	67	242	98	54	383	33	76	66	16	94	82	75
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	18.7	30.8	14.6	19.2
HCM LOS	C	D	B	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	53%	0%	22%	0%	100%	1%	38%
Vol Thru, %	47%	0%	78%	0%	0%	91%	33%
Vol Right, %	0%	100%	0%	100%	0%	8%	30%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	118	13	257	81	41	350	208
LT Vol	63	0	56	0	41	5	78
Through Vol	55	0	201	0	0	318	68
RT Vol	0	13	0	81	0	27	62
Lane Flow Rate	142	16	310	98	49	421	251
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.327	0.032	0.623	0.174	0.101	0.81	0.532
Departure Headway (Hd)	8.281	7.284	7.238	6.407	7.484	6.923	7.642
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	432	489	499	557	478	522	471
Service Time	6.064	5.066	5.008	4.177	5.249	4.688	5.719
HCM Lane V/C Ratio	0.329	0.033	0.621	0.176	0.103	0.807	0.533
HCM Control Delay	15.1	10.3	21.3	10.5	11.1	33.1	19.2
HCM Lane LOS	C	B	C	B	B	D	C
HCM 95th-tile Q	1.4	0.1	4.2	0.6	0.3	7.8	3.1

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

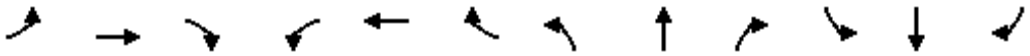
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	22	13	6	60	34	10	89	1	16	155	104
Future Vol, veh/h	50	22	13	6	60	34	10	89	1	16	155	104
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles, %	0	4	7	0	0	0	0	3	0	0	2	2
Mvmt Flow	64	28	17	8	77	44	13	114	1	21	199	133
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.3	9.1	9	10.9
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	10%	59%	6%	6%
Vol Thru, %	89%	26%	60%	56%
Vol Right, %	1%	15%	34%	38%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	85	100	275
LT Vol	10	50	6	16
Through Vol	89	22	60	155
RT Vol	1	13	34	104
Lane Flow Rate	128	109	128	353
Geometry Grp	1	1	1	1
Degree of Util (X)	0.175	0.157	0.176	0.435
Departure Headway (Hd)	4.917	5.196	4.955	4.441
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	724	684	717	807
Service Time	2.985	3.275	3.033	2.492
HCM Lane V/C Ratio	0.177	0.159	0.179	0.437
HCM Control Delay	9	9.3	9.1	10.9
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	0.6	0.6	0.6	2.2

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing Mid
11/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	125	3	225	343	449	0	0	671	353
Future Volume (veh/h)	0	0	0	125	3	225	343	449	0	0	671	353
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1885	1885	1885	1885	1885	0	0	1885	1885
Adj Flow Rate, veh/h				130	3	234	357	468	0	0	699	368
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				1	1	1	1	1	0	0	1	1
Cap, veh/h				322	4	283	642	2414	0	0	534	281
Arrive On Green				0.18	0.18	0.18	0.71	1.00	0.00	0.00	0.24	0.24
Sat Flow, veh/h				1795	20	1580	1795	3676	0	0	2320	1170
Grp Volume(v), veh/h				130	0	237	357	468	0	0	562	505
Grp Sat Flow(s),veh/h/ln				1795	0	1601	1795	1791	0	0	1791	1605
Q Serve(g_s), s				3.8	0.0	8.6	5.6	0.0	0.0	0.0	14.4	14.4
Cycle Q Clear(g_c), s				3.8	0.0	8.6	5.6	0.0	0.0	0.0	14.4	14.4
Prop In Lane				1.00		0.99	1.00		0.00	0.00		0.73
Lane Grp Cap(c), veh/h				322	0	287	642	2414	0	0	430	385
V/C Ratio(X)				0.40	0.00	0.83	0.56	0.19	0.00	0.00	1.31	1.31
Avail Cap(c_a), veh/h				383	0	341	642	2414	0	0	430	385
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.72	0.72	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				21.8	0.0	23.7	6.3	0.0	0.0	0.0	22.8	22.8
Incr Delay (d2), s/veh				0.3	0.0	11.4	0.5	0.1	0.0	0.0	154.7	157.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.5	0.0	3.8	1.5	0.0	0.0	0.0	24.1	21.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				22.1	0.0	35.1	6.8	0.1	0.0	0.0	177.5	179.9
LnGrp LOS				C	A	D	A	A	A	A	F	F
Approach Vol, veh/h					367			825			1067	
Approach Delay, s/veh					30.5			3.0			178.6	
Approach LOS					C			A			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	26.0	19.0		15.0		45.0						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	17.3	* 14		* 13		38.4						
Max Q Clear Time (g_c+I1), s	7.6	16.4		10.6		2.0						
Green Ext Time (p_c), s	0.1	0.0		0.2		1.4						

Intersection Summary		
HCM 6th Ctrl Delay		90.4
HCM 6th LOS		F

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	97	291	0	0	0	0	555	127	290	498	0
Future Volume (veh/h)	204	97	291	0	0	0	0	555	127	290	498	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885				0	1885	1885	1885	1885	0
Adj Flow Rate, veh/h	183	240	230				0	603	138	315	541	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	1	1	1				0	1	1	1	1	0
Cap, veh/h	319	335	284				0	836	191	554	2419	0
Arrive On Green	0.18	0.18	0.18				0.00	0.29	0.29	0.10	0.22	0.00
Sat Flow, veh/h	1795	1885	1598				0	2977	658	1795	3676	0
Grp Volume(v), veh/h	183	240	230				0	374	367	315	541	0
Grp Sat Flow(s),veh/h/ln	1795	1885	1598				0	1791	1750	1795	1791	0
Q Serve(g_s), s	5.6	7.2	8.3				0.0	11.2	11.3	10.0	7.4	0.0
Cycle Q Clear(g_c), s	5.6	7.2	8.3				0.0	11.2	11.3	10.0	7.4	0.0
Prop In Lane	1.00		1.00				0.00		0.38	1.00		0.00
Lane Grp Cap(c), veh/h	319	335	284				0	519	508	554	2419	0
V/C Ratio(X)	0.57	0.72	0.81				0.00	0.72	0.72	0.57	0.22	0.00
Avail Cap(c_a), veh/h	383	402	341				0	519	508	554	2419	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	0.34	0.34	0.00
Uniform Delay (d), s/veh	22.6	23.2	23.7				0.0	19.1	19.1	23.1	10.4	0.0
Incr Delay (d2), s/veh	0.6	3.4	9.7				0.0	8.4	8.7	0.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.2	3.6				0.0	5.5	5.5	4.7	2.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	23.2	26.6	33.4				0.0	27.5	27.8	23.4	10.5	0.0
LnGrp LOS	C	C	C				A	C	C	C	B	A
Approach Vol, veh/h		653						741			856	
Approach Delay, s/veh		28.0						27.6			15.3	
Approach LOS		C						C			B	

Timer - Assigned Phs	2		5	6		8
Phs Duration (G+Y+Rc), s	45.1		23.1	22.0		14.9
Change Period (Y+Rc), s	4.6		4.6	* 4.6		4.2
Max Green Setting (Gmax), s	38.4		14.3	* 17		12.8
Max Q Clear Time (g_c+I1), s	9.4		12.0	13.3		10.3
Green Ext Time (p_c), s	1.6		0.1	0.9		0.4

Intersection Summary	
HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	21.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	45	68	15	25	104	60	402	23	124	458	53
Future Vol, veh/h	75	45	68	15	25	104	60	402	23	124	458	53
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	83	50	76	17	28	116	67	447	26	138	509	59
Number of Lanes	0	1	1	0	1	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	2
HCM Control Delay	16.2	17.6	22.3	24.1
HCM LOS	C	C	C	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	62%	0%	10%	100%	0%	0%
Vol Thru, %	0%	100%	85%	38%	0%	17%	0%	100%	74%
Vol Right, %	0%	0%	15%	0%	100%	72%	0%	0%	26%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	60	268	157	120	68	144	124	305	206
LT Vol	60	0	0	75	0	15	124	0	0
Through Vol	0	268	134	45	0	25	0	305	153
RT Vol	0	0	23	0	68	104	0	0	53
Lane Flow Rate	67	298	174	133	76	160	138	339	229
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.164	0.689	0.399	0.358	0.181	0.399	0.327	0.756	0.497
Departure Headway (Hd)	8.85	8.334	8.228	9.678	8.64	8.985	8.534	8.019	7.833
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	405	435	438	372	415	400	422	451	459
Service Time	6.597	6.081	5.975	7.436	6.399	6.742	6.28	5.764	5.578
HCM Lane V/C Ratio	0.165	0.685	0.397	0.358	0.183	0.4	0.327	0.752	0.499
HCM Control Delay	13.3	27.7	16.4	17.8	13.3	17.6	15.4	31.7	18.1
HCM Lane LOS	B	D	C	C	B	C	C	D	C
HCM 95th-tile Q	0.6	5.1	1.9	1.6	0.7	1.9	1.4	6.3	2.7

Intersection	
Intersection Delay, s/veh	22.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	306	136	33	266	35	118	73	18	52	63	80
Future Vol, veh/h	59	306	136	33	266	35	118	73	18	52	63	80
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	333	148	36	289	38	128	79	20	57	68	87
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	26.7	22.8	17.7	17.7
HCM LOS	D	C	C	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	62%	0%	16%	0%	100%	1%	27%
Vol Thru, %	38%	0%	84%	0%	0%	87%	32%
Vol Right, %	0%	100%	0%	100%	0%	12%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	191	18	365	136	30	304	195
LT Vol	118	0	59	0	30	3	52
Through Vol	73	0	306	0	0	266	63
RT Vol	0	18	0	136	0	35	80
Lane Flow Rate	208	20	397	148	32	331	212
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.477	0.039	0.793	0.263	0.071	0.671	0.465
Departure Headway (Hd)	8.27	7.231	7.199	6.397	7.894	7.302	7.893
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	434	492	500	559	452	493	454
Service Time	6.056	5.016	4.977	4.174	5.676	5.084	5.985
HCM Lane V/C Ratio	0.479	0.041	0.794	0.265	0.071	0.671	0.467
HCM Control Delay	18.4	10.3	32.4	11.5	11.3	23.9	17.7
HCM Lane LOS	C	B	D	B	B	C	C
HCM 95th-tile Q	2.5	0.1	7.3	1	0.2	4.9	2.4

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

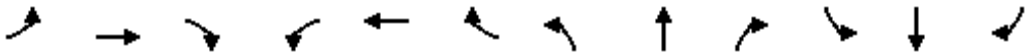
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Future Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	138	55	26	3	41	17	26	97	7	23	86	74
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	8.2	8.9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	63%	5%	13%
Vol Thru, %	74%	25%	67%	47%
Vol Right, %	6%	12%	28%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	208	58	174
LT Vol	25	131	3	22
Through Vol	92	52	39	82
RT Vol	7	25	16	70
Lane Flow Rate	131	219	61	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.174	0.289	0.081	0.23
Departure Headway (Hd)	4.8	4.757	4.753	4.524
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	744	753	749	791
Service Time	2.849	2.803	2.81	2.568
HCM Lane V/C Ratio	0.176	0.291	0.081	0.231
HCM Control Delay	8.9	9.7	8.2	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	1.2	0.3	0.9

HCM 6th Signalized Intersection Summary
1: Bay Ave & Hwy 1 NB Off-Ramp

Existing
11/28/2022



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	92	2	236	291	374	0	0	648	287
Future Volume (veh/h)	0	0	0	92	2	236	291	374	0	0	648	287
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1900	1900	1885	1885	1900	0	0	1885	1900
Adj Flow Rate, veh/h				96	2	246	303	390	0	0	675	299
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				0	0	1	1	0	0	0	1	0
Cap, veh/h				333	2	295	633	2416	0	0	570	252
Arrive On Green				0.18	0.18	0.18	0.70	1.00	0.00	0.00	0.24	0.24
Sat Flow, veh/h				1810	13	1599	1795	3705	0	0	2468	1051
Grp Volume(v), veh/h				96	0	248	303	390	0	0	509	465
Grp Sat Flow(s),veh/h/ln				1810	0	1612	1795	1805	0	0	1791	1634
Q Serve(g_s), s				2.7	0.0	8.9	4.5	0.0	0.0	0.0	14.4	14.4
Cycle Q Clear(g_c), s				2.7	0.0	8.9	4.5	0.0	0.0	0.0	14.4	14.4
Prop In Lane				1.00		0.99	1.00		0.00	0.00		0.64
Lane Grp Cap(c), veh/h				333	0	297	633	2416	0	0	430	392
V/C Ratio(X)				0.29	0.00	0.84	0.48	0.16	0.00	0.00	1.18	1.18
Avail Cap(c_a), veh/h				386	0	344	633	2416	0	0	430	392
HCM Platoon Ratio				1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.79	0.79	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				21.1	0.0	23.6	6.4	0.0	0.0	0.0	22.8	22.8
Incr Delay (d2), s/veh				0.2	0.0	12.8	0.2	0.1	0.0	0.0	104.6	106.2
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.1	0.0	4.1	1.2	0.0	0.0	0.0	18.1	16.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				21.3	0.0	36.3	6.6	0.1	0.0	0.0	127.4	129.0
LnGrp LOS				C	A	D	A	A	A	A	F	F
Approach Vol, veh/h					344			693			974	
Approach Delay, s/veh					32.1			2.9			128.2	
Approach LOS					C			A			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	25.7	19.0		15.3		44.7						
Change Period (Y+Rc), s	4.6	* 4.6		* 4.2		4.6						
Max Green Setting (Gmax), s	17.3	* 14		* 13		38.4						
Max Q Clear Time (g_c+I1), s	6.5	16.4		10.9		2.0						
Green Ext Time (p_c), s	0.1	0.0		0.2		1.1						

Intersection Summary		
HCM 6th Ctrl Delay		68.6
HCM 6th LOS		E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Bay Ave & Hwy 1 SB Off-Ramp

Existing
11/28/2022

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	155	325	0	0	0	0	465	132	317	454	0
Future Volume (veh/h)	185	155	325	0	0	0	0	465	132	317	454	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		0.96	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885				0	1885	1900	1885	1900	0
Adj Flow Rate, veh/h	192	268	269				0	511	145	348	499	0
Peak Hour Factor	0.91	0.91	0.91				0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	1				0	1	0	1	0	0
Cap, veh/h	360	378	318				0	792	223	516	2362	0
Arrive On Green	0.20	0.20	0.20				0.00	0.29	0.29	0.09	0.22	0.00
Sat Flow, veh/h	1810	1900	1598				0	2825	770	1795	3705	0
Grp Volume(v), veh/h	192	268	269				0	334	322	348	499	0
Grp Sat Flow(s),veh/h/ln	1810	1900	1598				0	1791	1709	1795	1805	0
Q Serve(g_s), s	5.7	7.9	9.7				0.0	9.8	9.9	11.2	6.8	0.0
Cycle Q Clear(g_c), s	5.7	7.9	9.7				0.0	9.8	9.9	11.2	6.8	0.0
Prop In Lane	1.00		1.00				0.00		0.45	1.00		0.00
Lane Grp Cap(c), veh/h	360	378	318				0	519	496	516	2362	0
V/C Ratio(X)	0.53	0.71	0.85				0.00	0.64	0.65	0.67	0.21	0.00
Avail Cap(c_a), veh/h	386	405	341				0	519	496	516	2362	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	0.33	0.33	1.00
Upstream Filter(I)	1.00	1.00	1.00				0.00	1.00	1.00	0.53	0.53	0.00
Uniform Delay (d), s/veh	21.5	22.4	23.1				0.0	18.6	18.6	24.4	10.8	0.0
Incr Delay (d2), s/veh	0.5	4.2	15.5				0.0	6.0	6.5	1.5	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	3.6	4.7				0.0	4.6	4.5	5.5	2.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	26.6	38.7				0.0	24.6	25.1	25.9	10.9	0.0
LnGrp LOS	C	C	D				A	C	C	C	B	A
Approach Vol, veh/h		729						656			847	
Approach Delay, s/veh		29.9						24.8			17.1	
Approach LOS		C						C			B	

Timer - Assigned Phs	2		5	6		8
Phs Duration (G+Y+Rc), s	43.9		21.9	22.0		16.1
Change Period (Y+Rc), s	4.6		4.6	* 4.6		4.2
Max Green Setting (Gmax), s	38.4		14.3	* 17		12.8
Max Q Clear Time (g_c+I1), s	8.8		13.2	11.9		11.7
Green Ext Time (p_c), s	1.4		0.0	1.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	23.5
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Intersection Delay, s/veh	16.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	89	44	79	23	45	86	89	290	14	154	438	52
Future Vol, veh/h	89	44	79	23	45	86	89	290	14	154	438	52
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	2
Mvmt Flow	91	45	81	23	46	88	91	296	14	157	447	53
Number of Lanes	0	1	1	0	1	0	1	2	0	1	2	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	1	2
HCM Control Delay	14.6	15.7	15	17.7
HCM LOS	B	C	B	C

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	67%	0%	15%	100%	0%	0%
Vol Thru, %	0%	100%	87%	33%	0%	29%	0%	100%	74%
Vol Right, %	0%	0%	13%	0%	100%	56%	0%	0%	26%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	89	193	111	133	79	154	154	292	198
LT Vol	89	0	0	89	0	23	154	0	0
Through Vol	0	193	97	44	0	45	0	292	146
RT Vol	0	0	14	0	79	86	0	0	52
Lane Flow Rate	91	197	113	136	81	157	157	298	202
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.213	0.433	0.245	0.332	0.174	0.361	0.345	0.612	0.407
Departure Headway (Hd)	8.424	7.91	7.819	8.805	7.753	8.272	7.911	7.398	7.245
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	425	454	457	407	460	432	453	486	495
Service Time	6.205	5.691	5.6	6.594	5.542	6.061	5.683	5.17	5.016
HCM Lane V/C Ratio	0.214	0.434	0.247	0.334	0.176	0.363	0.347	0.613	0.408
HCM Control Delay	13.5	16.7	13.1	16	12.2	15.7	14.8	21.2	14.9
HCM Lane LOS	B	C	B	C	B	C	B	C	B
HCM 95th-tile Q	0.8	2.1	1	1.4	0.6	1.6	1.5	4	2

Intersection	
Intersection Delay, s/veh	15.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	72	281	125	23	242	24	100	78	25	41	48	62
Future Vol, veh/h	72	281	125	23	242	24	100	78	25	41	48	62
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	73	287	128	23	247	24	102	80	26	42	49	63
Number of Lanes	0	1	1	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay	17.8	15.5	14	13.3
HCM LOS	C	C	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	56%	0%	20%	0%	100%	1%	27%
Vol Thru, %	44%	0%	80%	0%	0%	90%	32%
Vol Right, %	0%	100%	0%	100%	0%	9%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	25	353	125	21	268	151
LT Vol	100	0	72	0	21	2	41
Through Vol	78	0	281	0	0	242	48
RT Vol	0	25	0	125	0	24	62
Lane Flow Rate	182	26	360	128	21	274	154
Geometry Grp	7	7	7	7	7	7	6
Degree of Util (X)	0.376	0.046	0.651	0.202	0.042	0.504	0.306
Departure Headway (Hd)	7.448	6.446	6.51	5.693	7.193	6.623	7.152
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	483	555	558	633	500	548	502
Service Time	5.194	4.191	4.221	3.404	4.907	4.337	5.201
HCM Lane V/C Ratio	0.377	0.047	0.645	0.202	0.042	0.5	0.307
HCM Control Delay	14.6	9.5	20.6	9.8	10.2	15.9	13.3
HCM Lane LOS	B	A	C	A	B	C	B
HCM 95th-tile Q	1.7	0.1	4.7	0.8	0.1	2.8	1.3

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Future Vol, veh/h	131	52	25	3	39	16	25	92	7	22	82	70
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	0	0
Mvmt Flow	138	55	26	3	41	17	26	97	7	23	86	74
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.7	8.2	8.9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	63%	5%	13%
Vol Thru, %	74%	25%	67%	47%
Vol Right, %	6%	12%	28%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	208	58	174
LT Vol	25	131	3	22
Through Vol	92	52	39	82
RT Vol	7	25	16	70
Lane Flow Rate	131	219	61	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.174	0.289	0.081	0.23
Departure Headway (Hd)	4.8	4.757	4.753	4.524
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	744	753	749	791
Service Time	2.849	2.803	2.81	2.568
HCM Lane V/C Ratio	0.176	0.291	0.081	0.231
HCM Control Delay	8.9	9.7	8.2	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	1.2	0.3	0.9

MOVEMENT SUMMARY

Site: 1 [EXAM (Site Folder: General)]

Bay-Hill
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Bay Avenue														
3	L2	59	2.0	67	2.0	0.461	8.1	LOS A	3.0	75.7	0.47	0.31	0.47	23.4
8	T1	392	2.0	445	2.0	0.461	8.1	LOS A	3.0	75.7	0.47	0.31	0.47	23.2
18	R2	11	2.0	13	2.0	0.461	8.1	LOS A	3.0	75.7	0.47	0.31	0.47	22.7
Approach		462	2.0	525	2.0	0.461	8.1	LOS A	3.0	75.7	0.47	0.31	0.47	23.2
East: Hill Street														
1	L2	6	2.0	7	2.0	0.260	7.8	LOS A	1.1	28.9	0.62	0.61	0.62	23.5
6	T1	38	2.0	43	2.0	0.260	7.8	LOS A	1.1	28.9	0.62	0.61	0.62	23.3
16	R2	127	2.0	144	2.0	0.260	7.8	LOS A	1.1	28.9	0.62	0.61	0.62	22.8
Approach		171	2.0	194	2.0	0.260	7.8	LOS A	1.1	28.9	0.62	0.61	0.62	22.9
North: Bay Avenue														
7	L2	76	2.0	86	2.0	0.412	7.2	LOS A	2.6	65.8	0.38	0.22	0.38	23.6
4	T1	329	2.0	374	2.0	0.412	7.2	LOS A	2.6	65.8	0.38	0.22	0.38	23.4
14	R2	29	2.0	33	2.0	0.412	7.2	LOS A	2.6	65.8	0.38	0.22	0.38	22.9
Approach		434	2.0	493	2.0	0.412	7.2	LOS A	2.6	65.8	0.38	0.22	0.38	23.4
West: Hill Street														
5	L2	51	2.0	58	2.0	0.134	5.7	LOS A	0.6	14.1	0.53	0.46	0.53	23.6
2	T1	17	2.0	19	2.0	0.134	5.7	LOS A	0.6	14.1	0.53	0.46	0.53	23.3
12	R2	30	2.0	34	2.0	0.134	5.7	LOS A	0.6	14.1	0.53	0.46	0.53	22.9
Approach		98	2.0	111	2.0	0.134	5.7	LOS A	0.6	14.1	0.53	0.46	0.53	23.3
All Vehicles		1165	2.0	1324	2.0	0.461	7.5	LOS A	3.0	75.7	0.46	0.33	0.46	23.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE ANALYSIS

Site: 1 [EXAM (Site Folder: General)]

Bay-Hill
Site Category: Proposed Design 1
Roundabout

Lane Queues (Distance)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (ft)	Back of Queue (ft)		Queue at Start of Green (ft)		Cycle Average Queue (ft)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Bay Avenue															
Lane 1		0.461	1.000	0.0	30.5	75.7	NA	NA	30.1	54.6	0.02	0.05	0.0	NA	NA
Approach		0.461			30.5	75.7	NA	NA	30.1	54.6	0.02	0.05			
East: Hill Street															
Lane 1		0.260	1.000	0.0	11.6	28.9	NA	NA	10.7	19.4	0.01	0.02	0.0	NA	NA
Approach		0.260			11.6	28.9	NA	NA	10.7	19.4	0.01	0.02			
North: Bay Avenue															
Lane 1		0.412	1.000	0.0	26.5	65.8	NA	NA	24.9	45.2	0.02	0.04	0.0	NA	NA
Approach		0.412			26.5	65.8	NA	NA	24.9	45.2	0.02	0.04			
West: Hill Street															
Lane 1		0.134	1.000	0.0	5.7	14.1	NA	NA	4.5	8.1	0.00	0.01	0.0	NA	NA
Approach		0.134			5.7	14.1	NA	NA	4.5	8.1	0.00	0.01			
Intersection		0.461			30.5	75.7	NA	NA	30.1	54.6	0.02	0.05			

Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.

Lane Queues (Vehicles)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (veh)	Back of Queue (veh)		Queue at Start of Green (veh)		Cycle Average Queue (veh)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Bay Avenue															
Lane 1		0.461	1.000	0.0	1.2	3.0	NA	NA	1.2	2.2	0.02	0.05	0.0	NA	NA
Approach		0.461			1.2	3.0	NA	NA	1.2	2.2	0.02	0.05			
East: Hill Street															
Lane 1		0.260	1.000	0.0	0.5	1.1	NA	NA	0.4	0.8	0.01	0.02	0.0	NA	NA
Approach		0.260			0.5	1.1	NA	NA	0.4	0.8	0.01	0.02			
North: Bay Avenue															
Lane 1		0.412	1.000	0.0	1.0	2.6	NA	NA	1.0	1.8	0.02	0.04	0.0	NA	NA
Approach		0.412			1.0	2.6	NA	NA	1.0	1.8	0.02	0.04			
West: Hill Street															
Lane 1		0.134	1.000	0.0	0.2	0.6	NA	NA	0.2	0.3	0.00	0.01	0.0	NA	NA
Approach		0.134			0.2	0.6	NA	NA	0.2	0.3	0.00	0.01			
Intersection		0.461			1.2	3.0	NA	NA	1.2	2.2	0.02	0.05			

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

Continuous Lane Performance

Lane Number	Deg. Satn v/c	Unint. Speed mph	Unint. Travel Delay sec	Hdwy sec	Spacing ft	Aver. Vehicle Length ft	Occup. Time sec	Space Time sec	Space Occup. Ratio %	Time Occup. Ratio %	Density veh/mi	Density pc/mi	LOS (Density Method)
South: Bay Avenue													
This approach does not have any continuous lanes													
East: Hill Street													
This approach does not have any continuous lanes													
North: Bay Avenue													
This approach does not have any continuous lanes													
West: Hill Street													
This approach does not have any continuous lanes													

Midblock Effective Detection Zone Length = 7 ft

MOVEMENT SUMMARY

Site: 1 [EX-Midday (Site Folder: General)]

Bay-Hill
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Bay Avenue														
3	L2	60	1.0	67	1.0	0.523	9.9	LOS A	3.7	94.1	0.62	0.53	0.66	23.0
8	T1	402	1.0	447	1.0	0.523	9.9	LOS A	3.7	94.1	0.62	0.53	0.66	22.8
18	R2	23	1.0	26	1.0	0.523	9.9	LOS A	3.7	94.1	0.62	0.53	0.66	22.3
Approach		485	1.0	539	1.0	0.523	9.9	LOS A	3.7	94.1	0.62	0.53	0.66	22.8
East: Hill Street														
1	L2	15	1.0	17	1.0	0.217	7.3	LOS A	0.9	23.3	0.61	0.60	0.61	23.5
6	T1	25	1.0	28	1.0	0.217	7.3	LOS A	0.9	23.3	0.61	0.60	0.61	23.3
16	R2	104	1.0	116	1.0	0.217	7.3	LOS A	0.9	23.3	0.61	0.60	0.61	22.8
Approach		144	1.0	160	1.0	0.217	7.3	LOS A	0.9	23.3	0.61	0.60	0.61	23.0
North: Bay Avenue														
7	L2	124	1.0	138	1.0	0.580	9.9	LOS A	4.8	122.0	0.48	0.28	0.48	22.9
4	T1	458	1.0	509	1.0	0.580	9.9	LOS A	4.8	122.0	0.48	0.28	0.48	22.7
14	R2	53	1.0	59	1.0	0.580	9.9	LOS A	4.8	122.0	0.48	0.28	0.48	22.3
Approach		635	1.0	706	1.0	0.580	9.9	LOS A	4.8	122.0	0.48	0.28	0.48	22.7
West: Hill Street														
5	L2	75	1.0	83	1.0	0.303	9.0	LOS A	1.3	33.6	0.66	0.66	0.66	22.9
2	T1	45	1.0	50	1.0	0.303	9.0	LOS A	1.3	33.6	0.66	0.66	0.66	22.7
12	R2	68	1.0	76	1.0	0.303	9.0	LOS A	1.3	33.6	0.66	0.66	0.66	22.2
Approach		188	1.0	209	1.0	0.303	9.0	LOS A	1.3	33.6	0.66	0.66	0.66	22.6
All Vehicles		1452	1.0	1613	1.0	0.580	9.5	LOS A	4.8	122.0	0.56	0.45	0.58	22.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE ANALYSIS

Site: 1 [EX-Midday (Site Folder: General)]

Bay-Hill
Site Category: Proposed Design 1
Roundabout

Lane Queues (Distance)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (ft)	Back of Queue (ft)		Queue at Start of Green (ft)		Cycle Average Queue (ft)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Bay Avenue															
Lane 1		0.523	1.000	2.1	37.9	94.1	NA	NA	37.3	67.7	0.02	0.06	0.0	NA	NA
Approach		0.523			37.9	94.1	NA	NA	37.3	67.7	0.02	0.06			
East: Hill Street															
Lane 1		0.217	1.000	0.0	9.4	23.3	NA	NA	8.2	14.9	0.01	0.01	0.0	NA	NA
Approach		0.217			9.4	23.3	NA	NA	8.2	14.9	0.01	0.01			
North: Bay Avenue															
Lane 1		0.580	1.000	0.0	49.1	122.0	NA	NA	48.7	88.3	0.03	0.08	0.0	NA	NA
Approach		0.580			49.1	122.0	NA	NA	48.7	88.3	0.03	0.08			
West: Hill Street															
Lane 1		0.303	1.000	0.0	13.5	33.6	NA	NA	13.2	23.9	0.01	0.02	0.0	NA	NA
Approach		0.303			13.5	33.6	NA	NA	13.2	23.9	0.01	0.02			
Intersection		0.580			49.1	122.0	NA	NA	48.7	88.3	0.03	0.08			

Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.

Lane Queues (Vehicles)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (veh)	Back of Queue (veh)		Queue at Start of Green (veh)		Cycle Average Queue (veh)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Bay Avenue															
Lane 1		0.523	1.000	0.1	1.5	3.7	NA	NA	1.5	2.7	0.02	0.06	0.0	NA	NA
Approach		0.523			1.5	3.7	NA	NA	1.5	2.7	0.02	0.06			
East: Hill Street															
Lane 1		0.217	1.000	0.0	0.4	0.9	NA	NA	0.3	0.6	0.01	0.01	0.0	NA	NA
Approach		0.217			0.4	0.9	NA	NA	0.3	0.6	0.01	0.01			
North: Bay Avenue															
Lane 1		0.580	1.000	0.0	1.9	4.8	NA	NA	1.9	3.5	0.03	0.08	0.0	NA	NA
Approach		0.580			1.9	4.8	NA	NA	1.9	3.5	0.03	0.08			
West: Hill Street															
Lane 1		0.303	1.000	0.0	0.5	1.3	NA	NA	0.5	0.9	0.01	0.02	0.0	NA	NA
Approach		0.303			0.5	1.3	NA	NA	0.5	0.9	0.01	0.02			
Intersection		0.580			1.9	4.8	NA	NA	1.9	3.5	0.03	0.08			

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

Continuous Lane Performance

Lane Number	Deg. Satn v/c	Unint. Speed mph	Unint. Travel Delay sec	Hdwy sec	Spacing ft	Aver. Vehicle Length ft	Occup. Time sec	Space Time sec	Space Occup. Ratio %	Time Occup. Ratio %	Density veh/mi	Density pc/mi	LOS (Density Method)
South: Bay Avenue													
This approach does not have any continuous lanes													
East: Hill Street													
This approach does not have any continuous lanes													
North: Bay Avenue													
This approach does not have any continuous lanes													
West: Hill Street													
This approach does not have any continuous lanes													

Midblock Effective Detection Zone Length = 7 ft

MOVEMENT SUMMARY

Site: 1 [EXPM (Site Folder: General)]

Bay-Hill
Site Category: Proposed Design 1
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] ft	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed mph
South: Bay Avenue														
3	L2	86	1.0	88	1.0	0.389	7.7	LOS A	2.2	54.6	0.54	0.43	0.54	23.4
8	T1	290	1.0	296	1.0	0.389	7.7	LOS A	2.2	54.6	0.54	0.43	0.54	23.2
18	R2	13	1.0	13	1.0	0.389	7.7	LOS A	2.2	54.6	0.54	0.43	0.54	22.7
Approach		389	1.0	397	1.0	0.389	7.7	LOS A	2.2	54.6	0.54	0.43	0.54	23.2
East: Hill Street														
1	L2	22	1.0	22	1.0	0.174	6.1	LOS A	0.8	18.9	0.55	0.49	0.55	23.8
6	T1	45	1.0	46	1.0	0.174	6.1	LOS A	0.8	18.9	0.55	0.49	0.55	23.6
16	R2	76	1.0	78	1.0	0.174	6.1	LOS A	0.8	18.9	0.55	0.49	0.55	23.1
Approach		143	1.0	146	1.0	0.174	6.1	LOS A	0.8	18.9	0.55	0.49	0.55	23.4
North: Bay Avenue														
7	L2	142	1.0	145	1.0	0.555	9.7	LOS A	4.2	106.4	0.53	0.35	0.53	23.0
4	T1	438	1.0	447	1.0	0.555	9.7	LOS A	4.2	106.4	0.53	0.35	0.53	22.7
14	R2	52	1.0	53	1.0	0.555	9.7	LOS A	4.2	106.4	0.53	0.35	0.53	22.3
Approach		632	1.0	645	1.0	0.555	9.7	LOS A	4.2	106.4	0.53	0.35	0.53	22.7
West: Hill Street														
5	L2	89	1.0	91	1.0	0.298	8.6	LOS A	1.3	33.6	0.65	0.65	0.65	23.0
2	T1	44	1.0	45	1.0	0.298	8.6	LOS A	1.3	33.6	0.65	0.65	0.65	22.7
12	R2	79	1.0	81	1.0	0.298	8.6	LOS A	1.3	33.6	0.65	0.65	0.65	22.3
Approach		212	1.0	216	1.0	0.298	8.6	LOS A	1.3	33.6	0.65	0.65	0.65	22.7
All Vehicles		1376	1.0	1404	1.0	0.555	8.6	LOS A	4.2	106.4	0.55	0.43	0.55	22.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Geometric Delay is not included).
Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

QUEUE ANALYSIS

Site: 1 [EXPM (Site Folder: General)]

Bay-Hill
Site Category: Proposed Design 1
Roundabout

Lane Queues (Distance)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (ft)	Back of Queue (ft)		Queue at Start of Green (ft)		Cycle Average Queue (ft)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Bay Avenue															
Lane 1		0.389	1.000	0.0	22.0	54.6	NA	NA	21.4	38.8	0.01	0.03	0.0	NA	NA
Approach		0.389			22.0	54.6	NA	NA	21.4	38.8	0.01	0.03			
East: Hill Street															
Lane 1		0.174	1.000	0.0	7.6	18.9	NA	NA	6.2	11.3	0.00	0.01	0.0	NA	NA
Approach		0.174			7.6	18.9	NA	NA	6.2	11.3	0.00	0.01			
North: Bay Avenue															
Lane 1		0.555	1.000	0.0	42.8	106.4	NA	NA	43.7	79.3	0.03	0.07	0.0	NA	NA
Approach		0.555			42.8	106.4	NA	NA	43.7	79.3	0.03	0.07			
West: Hill Street															
Lane 1		0.298	1.000	0.0	13.5	33.6	NA	NA	13.0	23.5	0.01	0.02	0.0	NA	NA
Approach		0.298			13.5	33.6	NA	NA	13.0	23.5	0.01	0.02			
Intersection		0.555			42.8	106.4	NA	NA	43.7	79.3	0.03	0.07			

Queue Model: HCM Queue Formula.
Gap-Acceptance Capacity: Traditional M1.

Lane Queues (Vehicles)

Lane Number	Contin. Lane	Deg. Satn	Prog. Factor (Queue)	Overflow Queue (veh)	Back of Queue (veh)		Queue at Start of Green (veh)		Cycle Average Queue (veh)		Queue Storage Ratio		Prob. Block.	Prob. SL Ov.	Ov. Lane No.
		v/c			Av.	95%	Av.	95%	Av.	95%	Av.	95%	%	%	
South: Bay Avenue															
Lane 1		0.389	1.000	0.0	0.9	2.2	NA	NA	0.8	1.5	0.01	0.03	0.0	NA	NA
Approach		0.389			0.9	2.2	NA	NA	0.8	1.5	0.01	0.03			
East: Hill Street															
Lane 1		0.174	1.000	0.0	0.3	0.8	NA	NA	0.2	0.4	0.00	0.01	0.0	NA	NA
Approach		0.174			0.3	0.8	NA	NA	0.2	0.4	0.00	0.01			
North: Bay Avenue															
Lane 1		0.555	1.000	0.0	1.7	4.2	NA	NA	1.7	3.1	0.03	0.07	0.0	NA	NA
Approach		0.555			1.7	4.2	NA	NA	1.7	3.1	0.03	0.07			
West: Hill Street															
Lane 1		0.298	1.000	0.0	0.5	1.3	NA	NA	0.5	0.9	0.01	0.02	0.0	NA	NA
Approach		0.298			0.5	1.3	NA	NA	0.5	0.9	0.01	0.02			
Intersection		0.555			1.7	4.2	NA	NA	1.7	3.1	0.03	0.07			

Queue Model: HCM Queue Formula.

Gap-Acceptance Capacity: Traditional M1.

Continuous Lane Performance

Lane Number	Deg. Satn v/c	Unint. Speed mph	Unint. Travel Delay sec	Hdwy sec	Spacing ft	Aver. Vehicle Length ft	Occup. Time sec	Space Time sec	Space Occup. Ratio %	Time Occup. Ratio %	Density veh/mi	Density pc/mi	LOS (Density Method)
South: Bay Avenue													
This approach does not have any continuous lanes													
East: Hill Street													
This approach does not have any continuous lanes													
North: Bay Avenue													
This approach does not have any continuous lanes													
West: Hill Street													
This approach does not have any continuous lanes													

Midblock Effective Detection Zone Length = 7 ft

Attachment D – Synchro Queuing Results

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	T	TR
Maximum Queue (ft)	192	66	263	75	76	496	496
Average Queue (ft)	48	26	195	23	27	158	296
95th Queue (ft)	106	52	287	58	66	418	487
Link Distance (ft)			235	235	235	481	481
Upstream Blk Time (%)			8			1	2
Queuing Penalty (veh)			23			0	0
Storage Bay Dist (ft)	180						
Storage Blk Time (%)	1						
Queuing Penalty (veh)	2						

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	376	85	272	321	159	117	78
Average Queue (ft)	122	227	57	141	165	91	64	37
95th Queue (ft)	217	386	112	243	288	136	104	74
Link Distance (ft)				662	662	235	235	235
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)	2	53	1					
Queuing Penalty (veh)	8	153	4					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	89	70	116	83	86	120	79	205	123
Average Queue (ft)	36	14	53	31	37	43	44	91	33
95th Queue (ft)	78	44	84	61	72	80	74	175	82
Link Distance (ft)	95		348		313	313		662	662
Upstream Blk Time (%)	0								
Queuing Penalty (veh)	0								
Storage Bay Dist (ft)		45		60			55		
Storage Blk Time (%)	5	0		1	1		6	12	
Queuing Penalty (veh)	1	0		3	1		10	10	

Intersection: 4: Capitola Ave & Bay Ave

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	127	94	205	65	28	92
Average Queue (ft)	58	23	70	32	10	47
95th Queue (ft)	109	83	140	52	31	80
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	5	0	29	1		
Queuing Penalty (veh)	4	0	6	0		

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	95	58	55	88
Average Queue (ft)	39	34	35	53
95th Queue (ft)	71	52	50	81
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 225

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	T	TR
Maximum Queue (ft)	133	84	246	73	73	533	520
Average Queue (ft)	71	35	137	25	26	408	459
95th Queue (ft)	115	66	235	58	59	692	601
Link Distance (ft)			235	235	235	481	481
Upstream Blk Time (%)			1			51	62
Queuing Penalty (veh)			2			0	0
Storage Bay Dist (ft)	180						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	347	85	293	354	246	160	133
Average Queue (ft)	102	244	72	132	188	124	92	61
95th Queue (ft)	217	402	121	222	307	227	141	99
Link Distance (ft)				662	662	235	235	235
Upstream Blk Time (%)						1		
Queuing Penalty (veh)						4		
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)	0	62	1					
Queuing Penalty (veh)	0	153	5					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	135	70	76	84	90	120	80	336	275
Average Queue (ft)	57	41	46	38	47	56	63	154	72
95th Queue (ft)	98	83	76	71	86	100	97	250	182
Link Distance (ft)	95		348		313	313		662	662
Upstream Blk Time (%)	1								
Queuing Penalty (veh)	0								
Storage Bay Dist (ft)		45		60			55		
Storage Blk Time (%)	14	1		1	3		16	27	
Queuing Penalty (veh)	9	1		2	2		36	33	

Intersection: 4: Capitola Ave & Bay Ave

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	650	95	405	173	80	150
Average Queue (ft)	258	73	178	73	16	58
95th Queue (ft)	544	135	354	130	59	111
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	56	0	66	18	0	
Queuing Penalty (veh)	77	2	11	3	0	

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	74	55	74	75
Average Queue (ft)	49	28	34	44
95th Queue (ft)	68	49	54	69
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 340

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	T	TR
Maximum Queue (ft)	161	123	245	68	73	405	451
Average Queue (ft)	60	44	157	20	24	139	240
95th Queue (ft)	119	80	248	55	61	337	444
Link Distance (ft)			235	235	235	481	481
Upstream Blk Time (%)			5				
Queuing Penalty (veh)			10				
Storage Bay Dist (ft)	180						
Storage Blk Time (%)	0						
Queuing Penalty (veh)	0						

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	358	85	205	256	242	146	120
Average Queue (ft)	132	332	84	94	158	139	82	47
95th Queue (ft)	238	375	88	144	232	200	127	85
Link Distance (ft)				662	662	235	235	235
Upstream Blk Time (%)						1		
Queuing Penalty (veh)						2		
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)	0	77	1					
Queuing Penalty (veh)	0	195	6					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	100	70	118	75	76	107	80	242	216
Average Queue (ft)	54	37	49	40	30	52	64	119	54
95th Queue (ft)	90	74	89	73	61	84	92	204	143
Link Distance (ft)	95		348		313	313		662	662
Upstream Blk Time (%)	0								
Queuing Penalty (veh)	0								
Storage Bay Dist (ft)		45		60			55		
Storage Blk Time (%)	11	1		3	1		20	21	
Queuing Penalty (veh)	9	2		4	1		44	33	

Intersection: 4: Capitola Ave & Bay Ave

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	304	95	115	107	49	86
Average Queue (ft)	81	26	41	44	18	42
95th Queue (ft)	186	79	88	83	42	73
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	12	0	14	5	0	
Queuing Penalty (veh)	15	0	2	1	0	

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	76	56	56	72
Average Queue (ft)	50	34	36	41
95th Queue (ft)	69	48	51	62
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 324

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	T	TR
Maximum Queue (ft)	109	96	248	51	78	496	496
Average Queue (ft)	43	43	171	28	31	237	352
95th Queue (ft)	81	76	273	56	70	534	573
Link Distance (ft)			235	235	235	481	481
Upstream Blk Time (%)			7			4	11
Queuing Penalty (veh)			22			0	0
Storage Bay Dist (ft)	180						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	339	85	268	339	200	128	80
Average Queue (ft)	101	183	57	115	177	90	73	23
95th Queue (ft)	200	292	115	219	300	149	116	54
Link Distance (ft)				448	448	235	235	235
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)	0	49	1					
Queuing Penalty (veh)	0	140	3					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	54	97	98	86
Average Queue (ft)	18	30	31	31
95th Queue (ft)	49	65	79	82
Link Distance (ft)	88	342	300	143
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Capitola Ave & Bay Ave

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	73	90	308	68	28	134
Average Queue (ft)	40	12	107	31	14	70
95th Queue (ft)	77	52	228	58	36	115
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	1	0	46	1		
Queuing Penalty (veh)	1	0	10	0		

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	78	54	67	139
Average Queue (ft)	39	37	37	55
95th Queue (ft)	63	54	59	91
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 177

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	T	TR
Maximum Queue (ft)	134	110	246	26	29	496	496
Average Queue (ft)	67	52	171	8	2	359	423
95th Queue (ft)	118	95	252	28	14	602	604
Link Distance (ft)			235	235	235	481	481
Upstream Blk Time (%)			1			11	23
Queuing Penalty (veh)			3			0	0
Storage Bay Dist (ft)	180						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	339	85	242	308	261	183	83
Average Queue (ft)	110	270	59	117	185	168	72	13
95th Queue (ft)	216	386	119	202	271	239	126	47
Link Distance (ft)				448	448	235	235	235
Upstream Blk Time (%)						1		
Queuing Penalty (veh)						3		
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)	0	59	0					
Queuing Penalty (veh)	0	145	1					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	109	54	119	210
Average Queue (ft)	40	25	51	56
95th Queue (ft)	87	57	97	150
Link Distance (ft)	88	342	300	143
Upstream Blk Time (%)	1			2
Queuing Penalty (veh)	0			12
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Capitola Ave & Bay Ave

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	328	95	281	174	80	152
Average Queue (ft)	112	41	108	65	15	65
95th Queue (ft)	260	112	227	135	45	121
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	28	0	49	15		
Queuing Penalty (veh)	37	1	8	3		

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	57	32	57	55
Average Queue (ft)	42	23	35	39
95th Queue (ft)	61	46	55	56
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 214

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	TR
Maximum Queue (ft)	134	124	244	26	315	361
Average Queue (ft)	54	49	149	3	114	224
95th Queue (ft)	111	92	230	16	243	355
Link Distance (ft)			235	235	481	481
Upstream Blk Time (%)			0			
Queuing Penalty (veh)			1			
Storage Bay Dist (ft)	180					
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	339	85	217	303	226	161	138
Average Queue (ft)	120	339	63	96	164	155	75	24
95th Queue (ft)	237	339	118	189	264	211	135	75
Link Distance (ft)				448	448	235	235	235
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						0		
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)		73	6					
Queuing Penalty (veh)		185	28					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	WB	NB	SB	B9
Directions Served	LTR	LTR	LTR	LTR	T
Maximum Queue (ft)	78	77	98	214	76
Average Queue (ft)	37	26	42	99	4
95th Queue (ft)	67	56	82	206	31
Link Distance (ft)	88	342	300	143	448
Upstream Blk Time (%)	0			4	
Queuing Penalty (veh)	0			30	
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 4: Capitola Ave & Bay Ave

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	166	95	208	85	52	66
Average Queue (ft)	58	21	70	42	20	34
95th Queue (ft)	123	77	146	70	47	59
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	8	0	28	2	0	
Queuing Penalty (veh)	11	0	3	1	0	

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	73	55	56	56
Average Queue (ft)	41	30	37	40
95th Queue (ft)	64	45	53	60
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 259

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	T	TR
Maximum Queue (ft)	175	81	239	69	88	489	496
Average Queue (ft)	53	32	176	24	31	106	210
95th Queue (ft)	124	58	252	57	78	296	381
Link Distance (ft)			235	235	235	481	481
Upstream Blk Time (%)			3			0	1
Queuing Penalty (veh)			10			0	0
Storage Bay Dist (ft)	180						
Storage Blk Time (%)	1						
Queuing Penalty (veh)	1						

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	376	85	352	368	179	122	112
Average Queue (ft)	116	237	61	101	172	103	75	32
95th Queue (ft)	198	408	117	212	317	166	103	88
Link Distance (ft)				412	412	235	235	235
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)	0	59	2					
Queuing Penalty (veh)	1	172	8					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	75	70	55	84	178	80	166
Average Queue (ft)	32	26	46	26	64	36	78
95th Queue (ft)	54	54	63	59	116	77	131
Link Distance (ft)	107		361		312		192
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		45		60		55	
Storage Blk Time (%)	2	1		0	6	0	14
Queuing Penalty (veh)	1	0		0	4	0	12

Intersection: 4: Capitola Ave & Bay Ave

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	149	32	395	68	28	101
Average Queue (ft)	41	3	121	34	8	54
95th Queue (ft)	88	16	291	59	28	91
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	2		46	1		
Queuing Penalty (veh)	2		10	0		

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	68	56	55	90
Average Queue (ft)	31	32	36	52
95th Queue (ft)	52	48	55	77
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 221

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	T	TR
Maximum Queue (ft)	136	82	254	68	72	515	496
Average Queue (ft)	69	41	146	31	36	376	430
95th Queue (ft)	115	69	231	59	71	620	596
Link Distance (ft)			235	235	235	481	481
Upstream Blk Time (%)			2			17	27
Queuing Penalty (veh)			5			0	0
Storage Bay Dist (ft)	180						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	376	85	247	237	244	171	125
Average Queue (ft)	156	313	71	100	158	135	104	49
95th Queue (ft)	234	424	116	177	228	214	144	104
Link Distance (ft)				412	412	235	235	235
Upstream Blk Time (%)						1		
Queuing Penalty (veh)						2		
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)	2	76	2					
Queuing Penalty (veh)	10	187	10					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	EB	WB	NB	NB	SB	SB	B9
Directions Served	LT	R	LTR	L	TR	L	TR	T
Maximum Queue (ft)	78	70	92	84	204	80	264	89
Average Queue (ft)	48	39	48	30	82	66	138	9
95th Queue (ft)	78	68	78	71	157	100	238	47
Link Distance (ft)	107		361		312		192	412
Upstream Blk Time (%)							4	
Queuing Penalty (veh)							28	
Storage Bay Dist (ft)		45		60		55		
Storage Blk Time (%)	7	2		0	19	2	42	
Queuing Penalty (veh)	4	2		0	12	11	52	

Intersection: 4: Capitola Ave & Bay Ave

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	504	95	234	172	80	136
Average Queue (ft)	149	48	106	72	14	64
95th Queue (ft)	358	119	197	134	44	115
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	32	0	53	18		
Queuing Penalty (veh)	43	1	9	3		

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	79	56	74	74
Average Queue (ft)	48	30	36	39
95th Queue (ft)	70	57	56	61
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 379

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	T	TR
Maximum Queue (ft)	92	86	253	74	71	496	496
Average Queue (ft)	55	41	122	20	31	165	273
95th Queue (ft)	93	75	197	52	68	385	480
Link Distance (ft)			235	235	235	481	481
Upstream Blk Time (%)			1			1	3
Queuing Penalty (veh)			3			0	0
Storage Bay Dist (ft)	180						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	358	85	222	240	246	135	99
Average Queue (ft)	131	339	79	96	157	142	99	40
95th Queue (ft)	247	345	112	174	224	220	133	82
Link Distance (ft)				412	412	235	235	235
Upstream Blk Time (%)						1		
Queuing Penalty (veh)						3		
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)	0	80	1					
Queuing Penalty (veh)	0	203	3					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	EB	WB	NB	NB	SB	SB	B9
Directions Served	LT	R	LTR	L	TR	L	TR	T
Maximum Queue (ft)	95	70	96	84	129	80	264	151
Average Queue (ft)	45	39	45	29	51	73	154	12
95th Queue (ft)	74	68	74	55	74	95	267	69
Link Distance (ft)	107		361		312		192	412
Upstream Blk Time (%)	0						7	
Queuing Penalty (veh)	0						52	
Storage Bay Dist (ft)		45		60		55		
Storage Blk Time (%)	7	2		0	5	2	40	
Queuing Penalty (veh)	6	2		1	4	11	61	

Intersection: 4: Capitola Ave & Bay Ave

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	133	95	197	149	80	110
Average Queue (ft)	50	12	54	55	20	43
95th Queue (ft)	97	52	121	107	52	80
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	4	0	20	10	0	
Queuing Penalty (veh)	4	0	2	3	0	

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	55	56	54	88
Average Queue (ft)	38	34	33	47
95th Queue (ft)	55	47	50	75
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 360

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	T	TR
Maximum Queue (ft)	91	119	252	108	113	496	496
Average Queue (ft)	41	33	176	22	24	215	350
95th Queue (ft)	70	70	275	51	62	491	540
Link Distance (ft)			235	235	235	481	481
Upstream Blk Time (%)			10			5	9
Queuing Penalty (veh)			30			0	0
Storage Bay Dist (ft)	180						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	363	85	301	288	147	130	55
Average Queue (ft)	125	260	68	132	166	88	58	36
95th Queue (ft)	229	412	115	245	272	133	97	59
Link Distance (ft)				662	662	235	235	235
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)	0	61	1					
Queuing Penalty (veh)	0	176	7					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	74	55	98	48	66	68	79	121	130
Average Queue (ft)	30	17	46	26	32	38	41	74	36
95th Queue (ft)	54	44	74	43	53	62	81	108	81
Link Distance (ft)	95		348		313	313		662	662
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)		45		60			55		
Storage Blk Time (%)	2	0		0	1		1	12	
Queuing Penalty (veh)	1	0		0	0		1	10	

Intersection: 4: Capitola Ave & Bay Ave

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	112	95	327	70	29	117
Average Queue (ft)	43	12	101	36	11	45
95th Queue (ft)	81	50	241	59	32	78
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	2	0	41	1		
Queuing Penalty (veh)	2	0	9	0		

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	55	79	55	75
Average Queue (ft)	31	34	31	53
95th Queue (ft)	45	54	54	74
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 236

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	T	TR
Maximum Queue (ft)	154	86	237	67	69	520	520
Average Queue (ft)	69	47	153	35	32	497	497
95th Queue (ft)	123	84	235	62	61	505	504
Link Distance (ft)			235	235	235	481	481
Upstream Blk Time (%)			2			68	85
Queuing Penalty (veh)			5			0	0
Storage Bay Dist (ft)	180						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	339	85	251	326	240	230	124
Average Queue (ft)	85	246	69	115	154	138	94	61
95th Queue (ft)	194	405	118	199	231	224	155	98
Link Distance (ft)				662	662	235	235	235
Upstream Blk Time (%)						0	0	
Queuing Penalty (veh)						0	0	
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)	0	57	1					
Queuing Penalty (veh)	0	141	5					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	112	70	74	50	66	106	80	277	125
Average Queue (ft)	44	44	39	25	34	46	69	120	58
95th Queue (ft)	76	68	61	44	60	83	98	191	111
Link Distance (ft)	95		348		313	313		662	662
Upstream Blk Time (%)	0								
Queuing Penalty (veh)	0								
Storage Bay Dist (ft)		45		60			55		
Storage Blk Time (%)	6	2		0	1		3	36	
Queuing Penalty (veh)	4	3		0	0		7	44	

Intersection: 4: Capitola Ave & Bay Ave

Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	441	95	703	192	80	157
Average Queue (ft)	208	68	339	70	19	68
95th Queue (ft)	426	137	719	139	58	122
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	59	0	74	20	0	
Queuing Penalty (veh)	80	2	12	4	0	

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	69	56	56	75
Average Queue (ft)	44	29	37	42
95th Queue (ft)	64	52	55	64
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 308

Intersection: 1: Bay Ave & Hwy 1 NB Off-Ramp

Movement	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	T	TR
Maximum Queue (ft)	114	90	241	73	73	330	431
Average Queue (ft)	52	48	106	37	33	146	244
95th Queue (ft)	94	79	182	70	69	296	417
Link Distance (ft)			235	235	235	481	481
Upstream Blk Time (%)			1				
Queuing Penalty (veh)			1				
Storage Bay Dist (ft)	180						
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 2: Bay Ave & Hwy 1 SB Off-Ramp

Movement	EB	EB	EB	NB	NB	SB	SB	SB
Directions Served	L	LTR	R	T	TR	L	T	T
Maximum Queue (ft)	175	363	85	159	272	221	160	115
Average Queue (ft)	133	332	84	87	158	140	94	58
95th Queue (ft)	245	384	89	143	247	206	136	100
Link Distance (ft)				662	662	235	235	235
Upstream Blk Time (%)						0		
Queuing Penalty (veh)						0		
Storage Bay Dist (ft)	150		60					
Storage Blk Time (%)	0	77	1					
Queuing Penalty (veh)	0	195	7					

Intersection: 3: Bay Ave & Retail Dwy/Hill St

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	T	TR	L	T	TR
Maximum Queue (ft)	78	70	82	51	46	79	80	288	247
Average Queue (ft)	43	34	46	31	26	38	68	129	72
95th Queue (ft)	74	67	72	47	40	67	97	237	168
Link Distance (ft)	95		348		313	313		662	662
Upstream Blk Time (%)	0								
Queuing Penalty (veh)	0								
Storage Bay Dist (ft)		45		60			55		
Storage Blk Time (%)	8	1		0	0		5	33	
Queuing Penalty (veh)	6	2		0	0		11	51	

Intersection: 4: Capitola Ave & Bay Ave

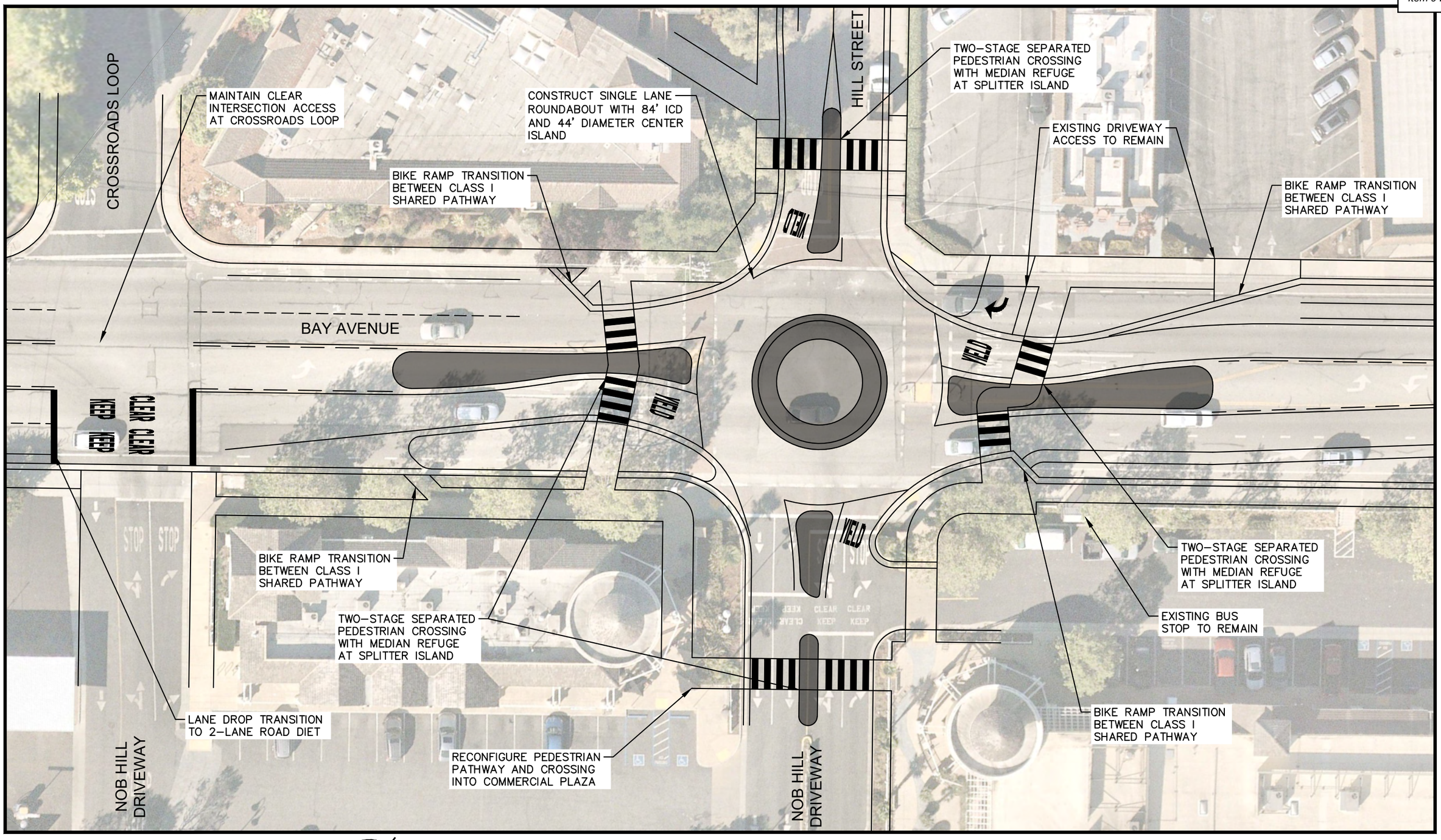
Movement	EB	EB	WB	NB	NB	SB
Directions Served	LT	R	LTR	LT	R	LTR
Maximum Queue (ft)	213	95	136	127	80	86
Average Queue (ft)	67	18	50	55	26	43
95th Queue (ft)	146	76	102	99	56	72
Link Distance (ft)	684		1089	771		981
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)		70			55	
Storage Blk Time (%)	15	0	18	6	0	
Queuing Penalty (veh)	18	0	2	1	0	

Intersection: 5: Capitola Ave & Hill St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	55	32	56	73
Average Queue (ft)	35	28	36	43
95th Queue (ft)	49	44	56	63
Link Distance (ft)	516	1007	981	402
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 296



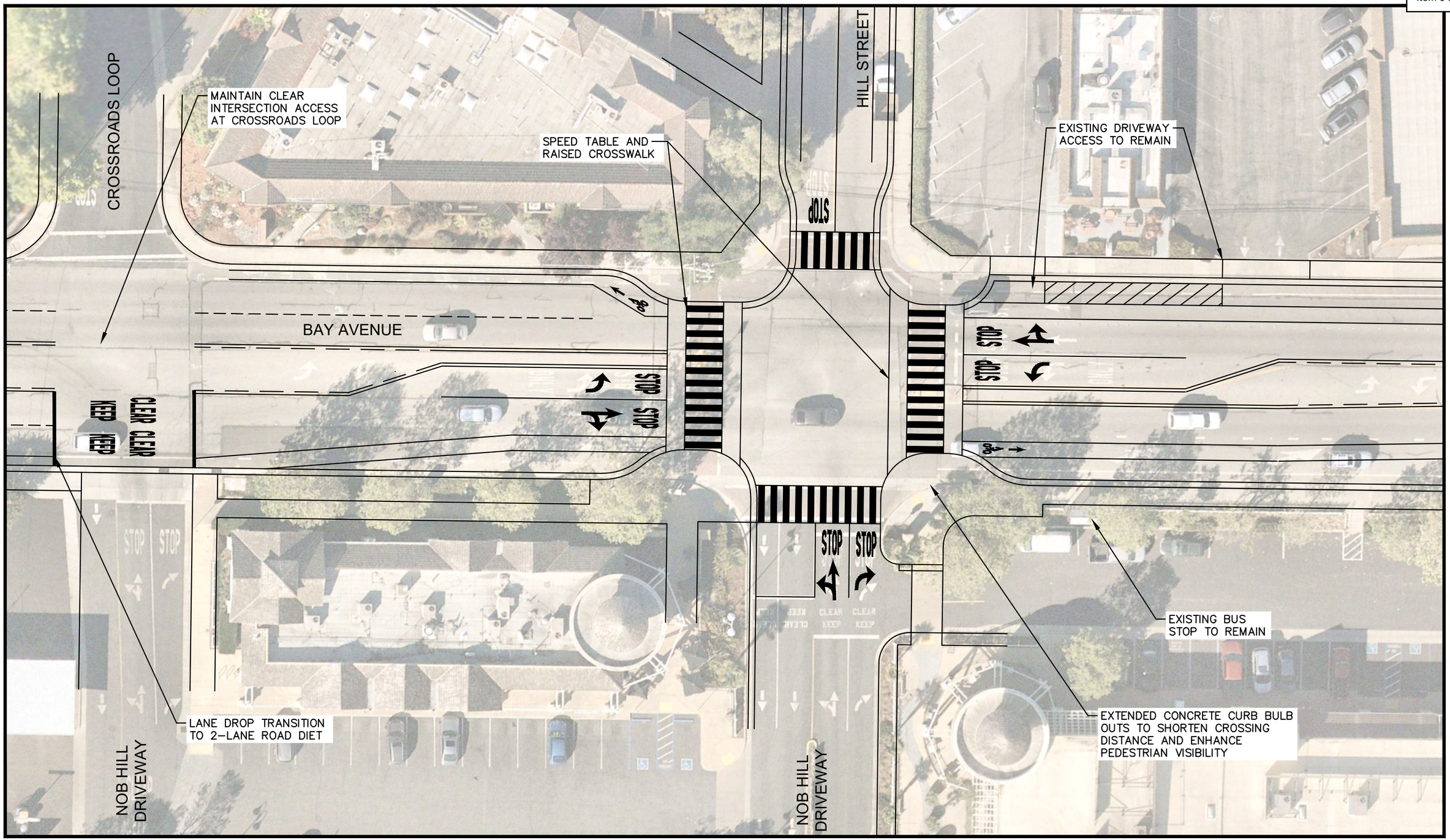
Kimley»Horn

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

CONCEPT LAYOUT FOR PLANNING PURPOSES. NOT FOR CONSTRUCTION

ALTERNATIVE 2 ROUNDABOUT



Kimley»Horn

NORTH

GRAPHIC SCALE IN FEET
0 15 30 60

CONCEPT LAYOUT FOR PLANNING PURPOSES. NOT FOR CONSTRUCTION

ALTERNATIVE 3
ALL-WAY STOP WITH ROAD DIET

Bay Avenue and Hill Street Traffic Safety

City Council

September 28, 2023


Bay Ave
SpeechRighter Plus
Friendly and Helpful
Staff · SpeechRight...
z County Bank
's Coffee
Bay Ave
Hill St
Bay Ave
Bay Ave

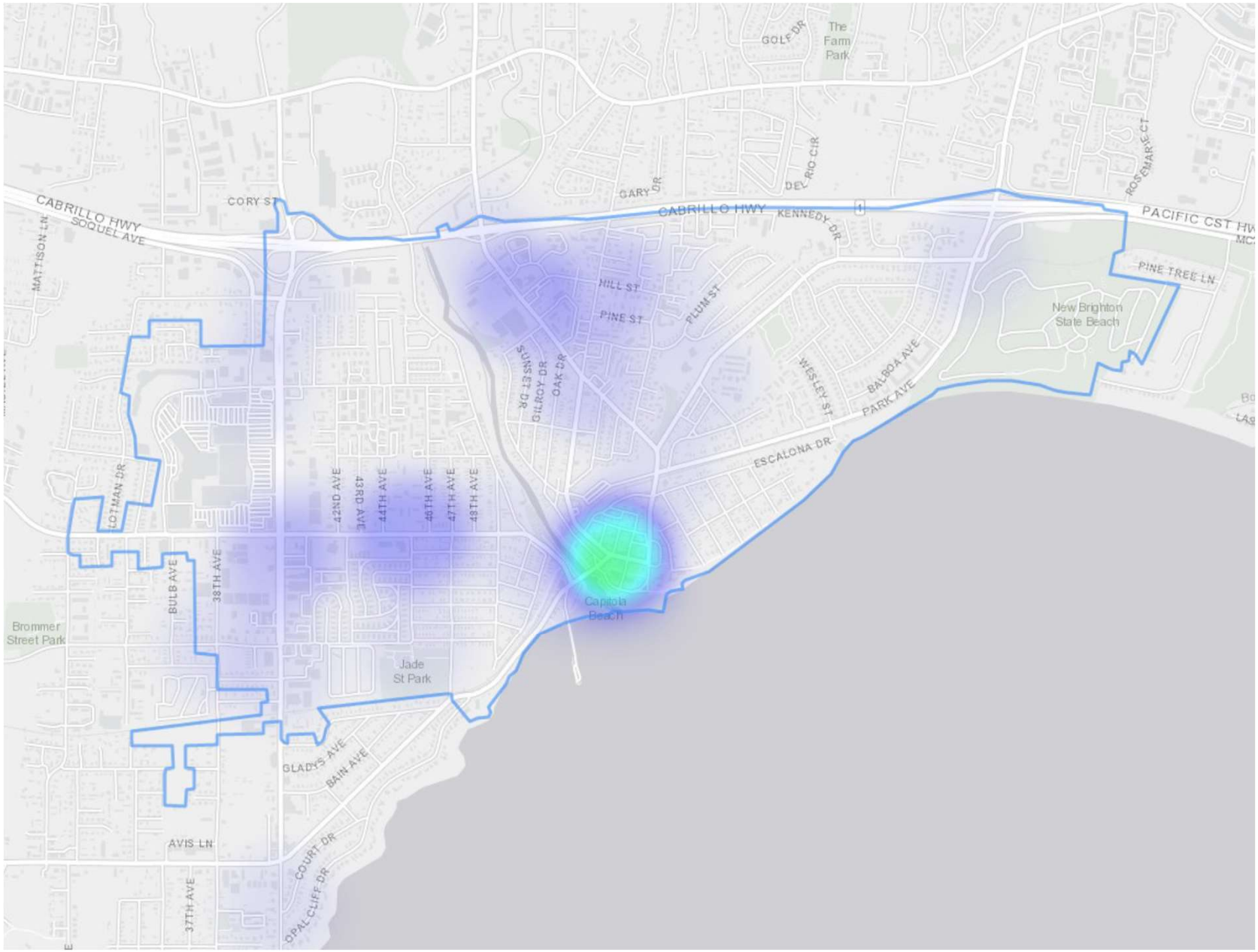
Bay Avenue and Hill Street Traffic Safety

Accident Data: Nov 2017 – Aug 2023

Vehicle Collision Type	Count	Primary Collision Factor	Collision Severity
Head On	1	Other	Property Damage
Sideswipe	4	Improper Turn, Auto R/W	Property Damage
Rearend	1	Unsafe Speed	Property Damage
Broadside	6	Improper Turn, Auto R/W, Unsafe Speed	Injury, PDO
Hit Object	1	Improper Turn	Property Damage
Auto/Ped	3	Failure to Yield	Injury

Bay Avenue and Hill Street Traffic Safety

Pedestrian Accidents



Bay Avenue and Hill Street Traffic Safety Evaluation Criteria

Level of Service - LOS

- Level of traffic flow
- Currently LOS C

Queue Length

- Space needed to stack
- Turning and through Lanes

Bike and Pedestrian Access

- Visibility
- Crossing distance

Bay Avenue and Hill Street Traffic Safety Alternatives

All-way Stop Control

Signal Control

Roundabout

Road Diet

Bay Avenue and Hill Street Traffic Safety

Signalized Intersection

Bay Avenue and Hill Street Traffic Safety

Signalized Intersection

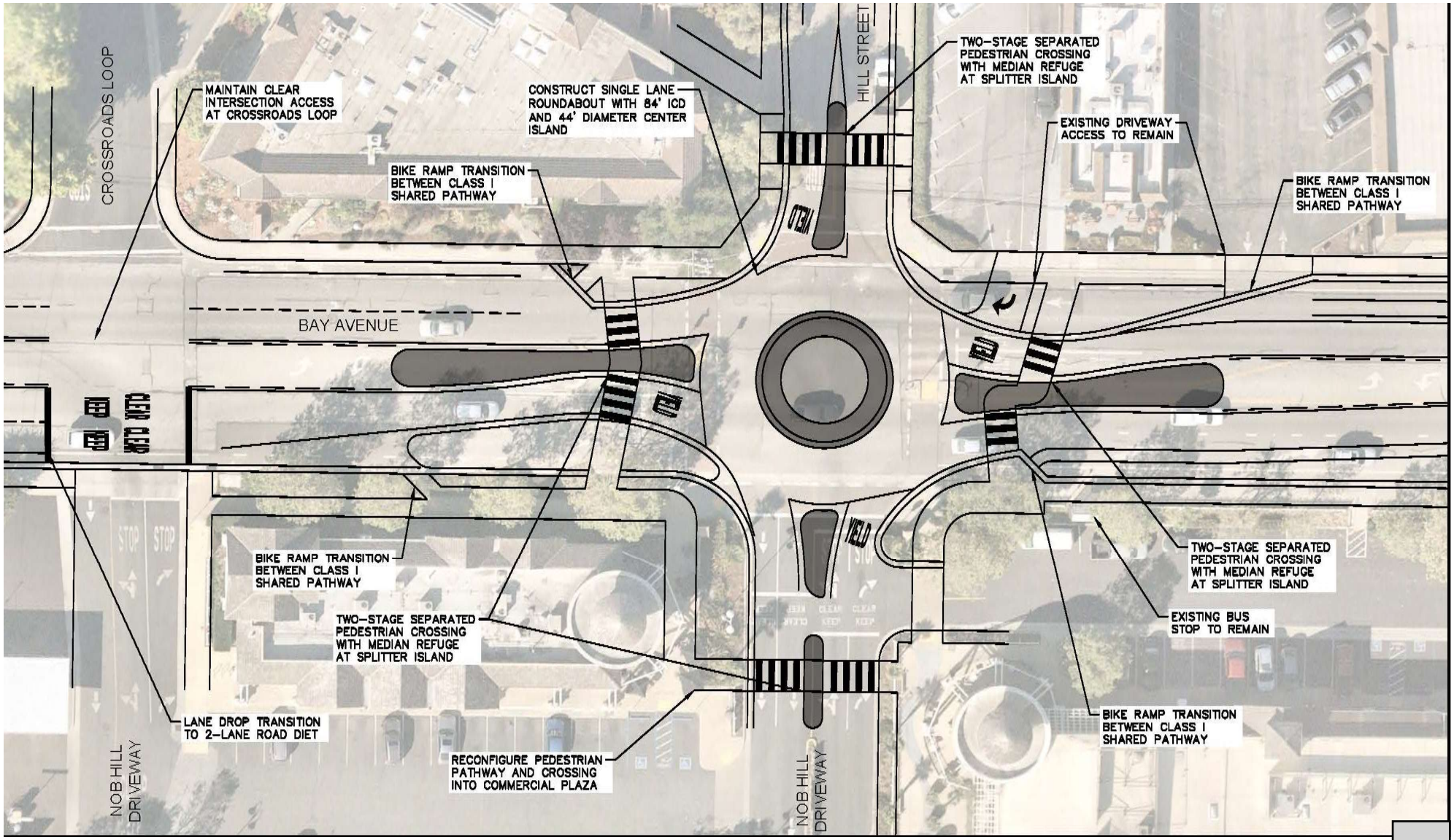
Pros

- Reduces driver uncertainty
- Provides designated crossing times

Cons

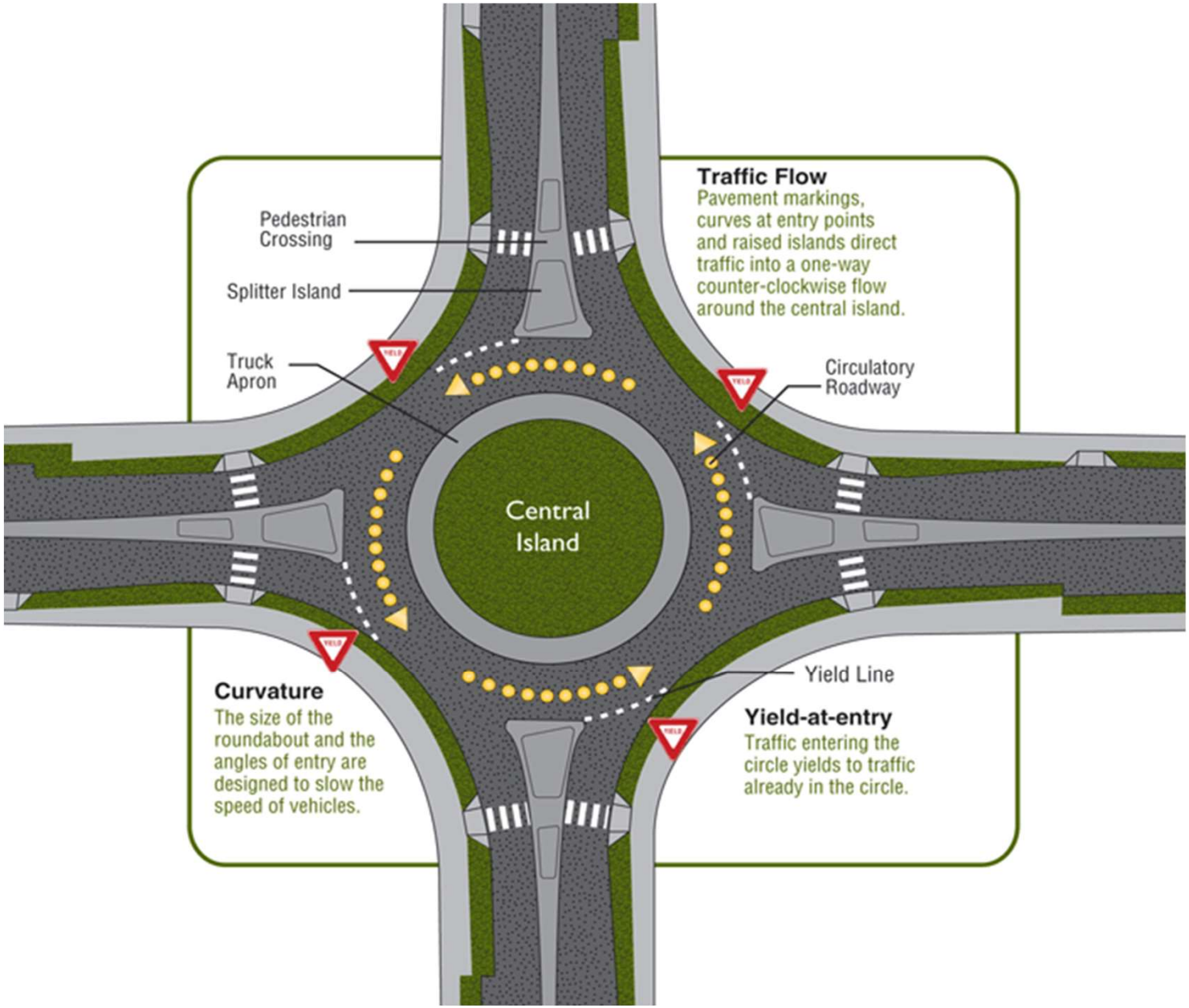
- High capital and maintenance costs
- Increased accident rate
- Asthetics
- Increased idle time

Bay Avenue and Hill Street Traffic Safety Roundabout



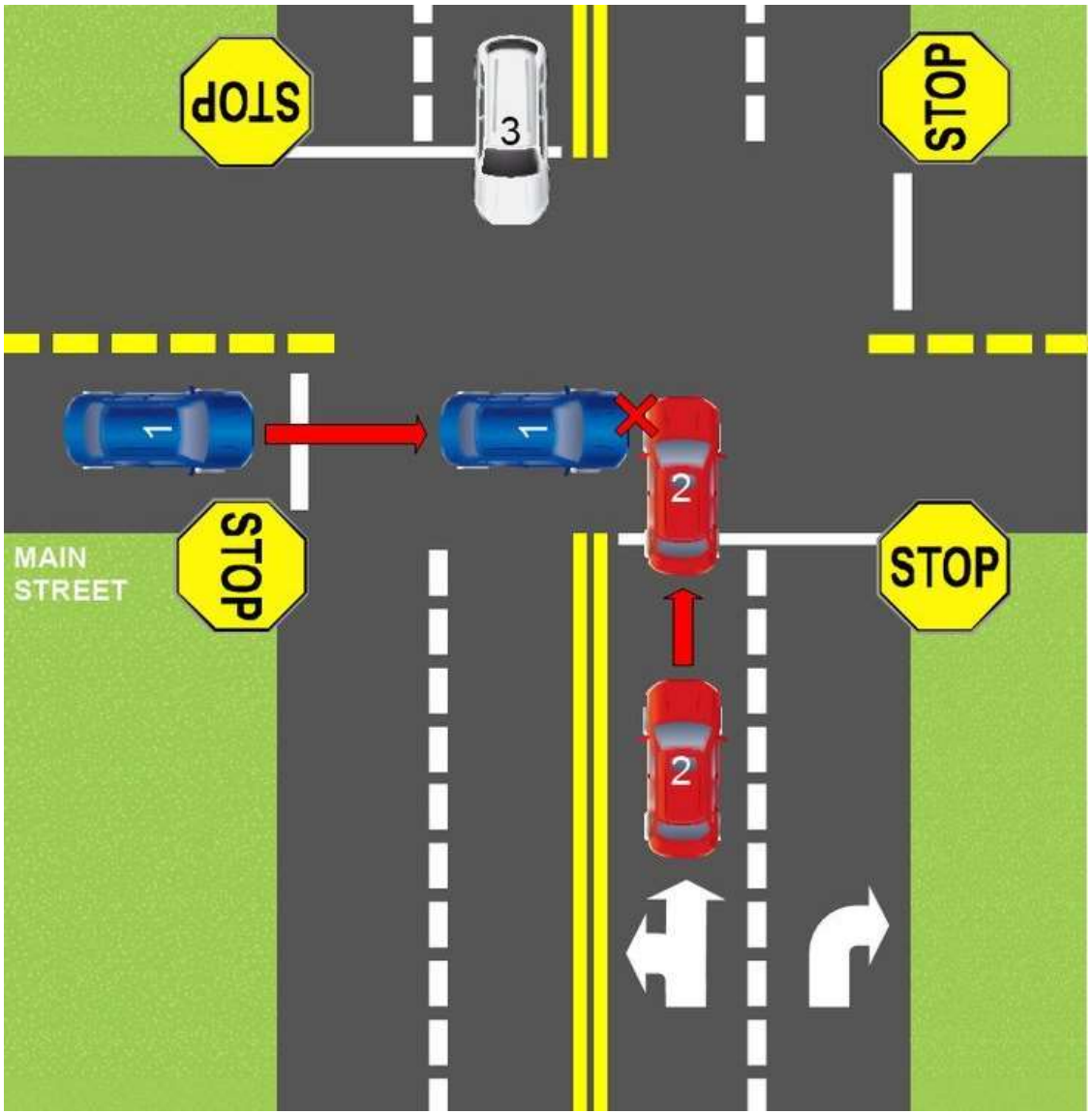
Bay Avenue and Hill Street Traffic Safety

Roundabout



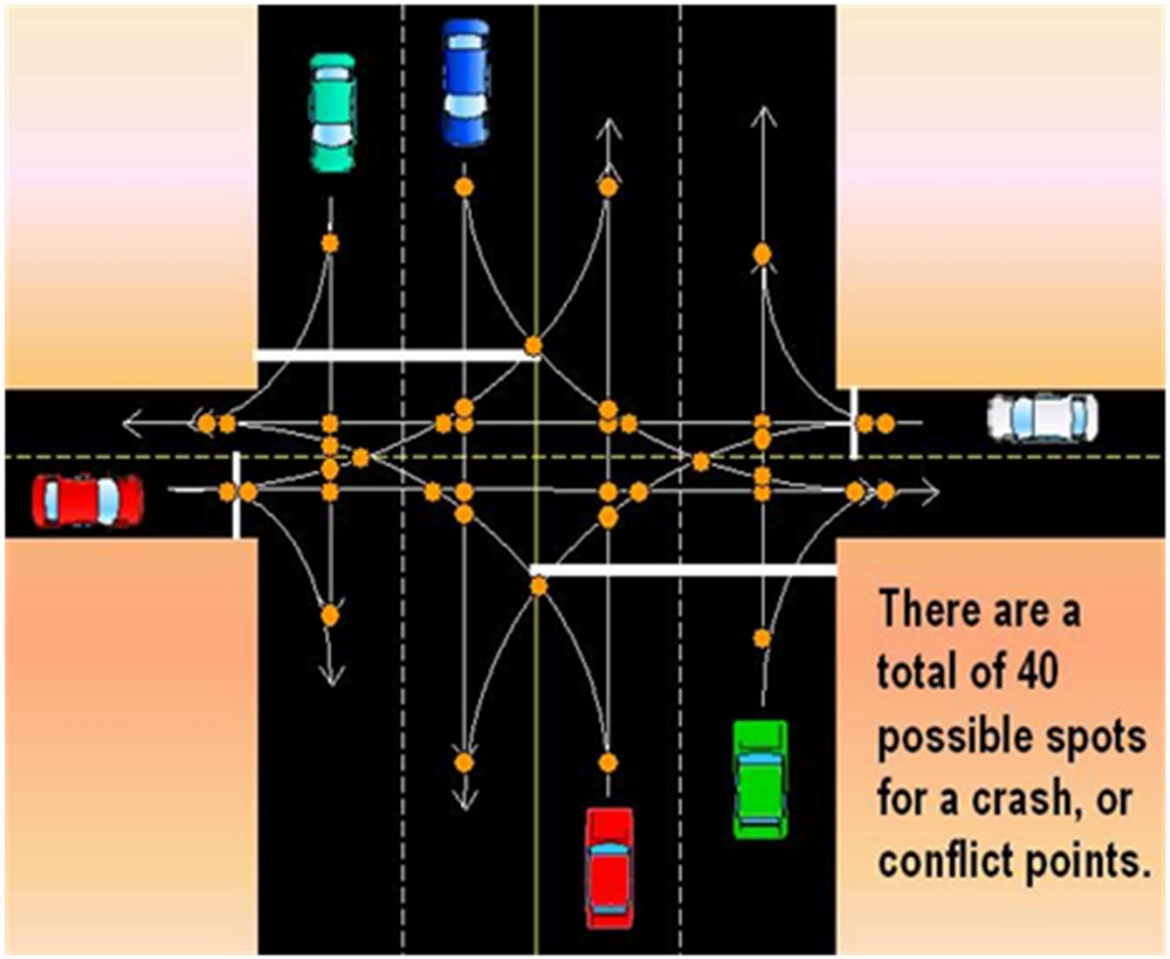
Bay Avenue and Hill Street Traffic Safety

Roundabout – Conflict Points



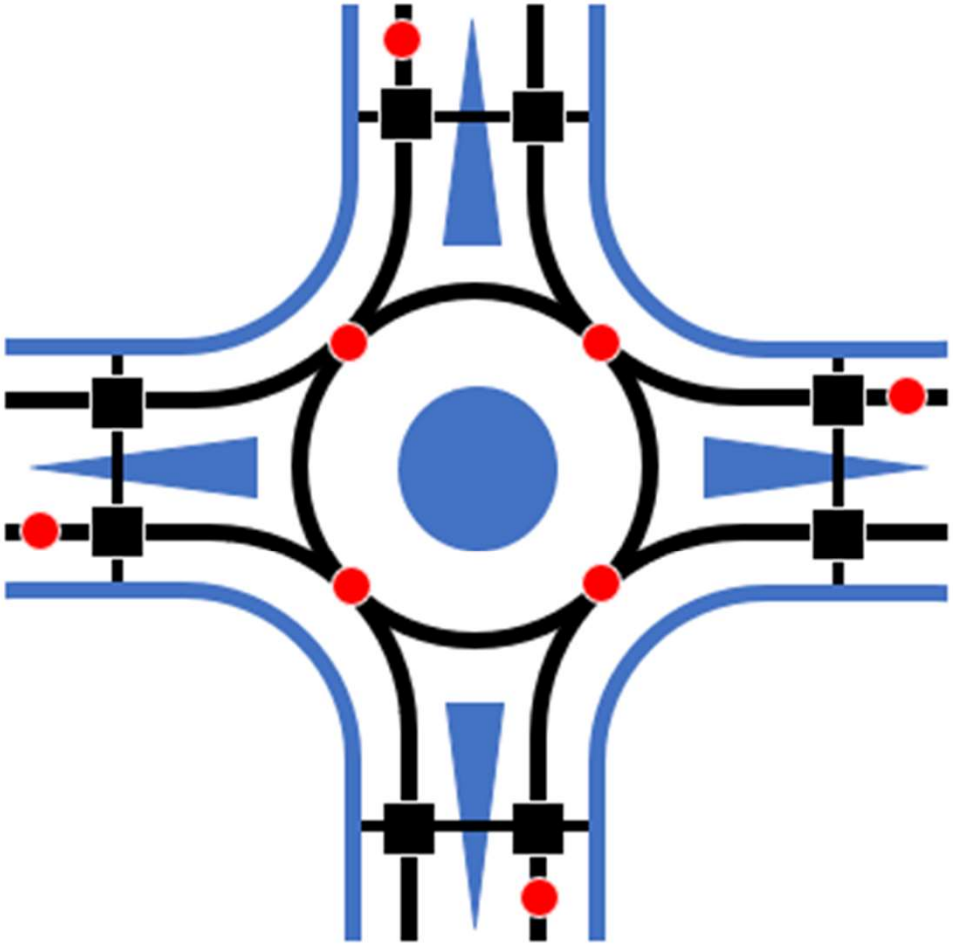
Bay Avenue and Hill Street Traffic Safety

Roundabout – Conflict Points



Bay Avenue and Hill Street Traffic Safety

Roundabout – Conflict Points



- 8 Vehicle Conflicts
- 8 Pedestrian Conflicts

Bay Avenue and Hill Street Traffic Safety Roundabout

Pros

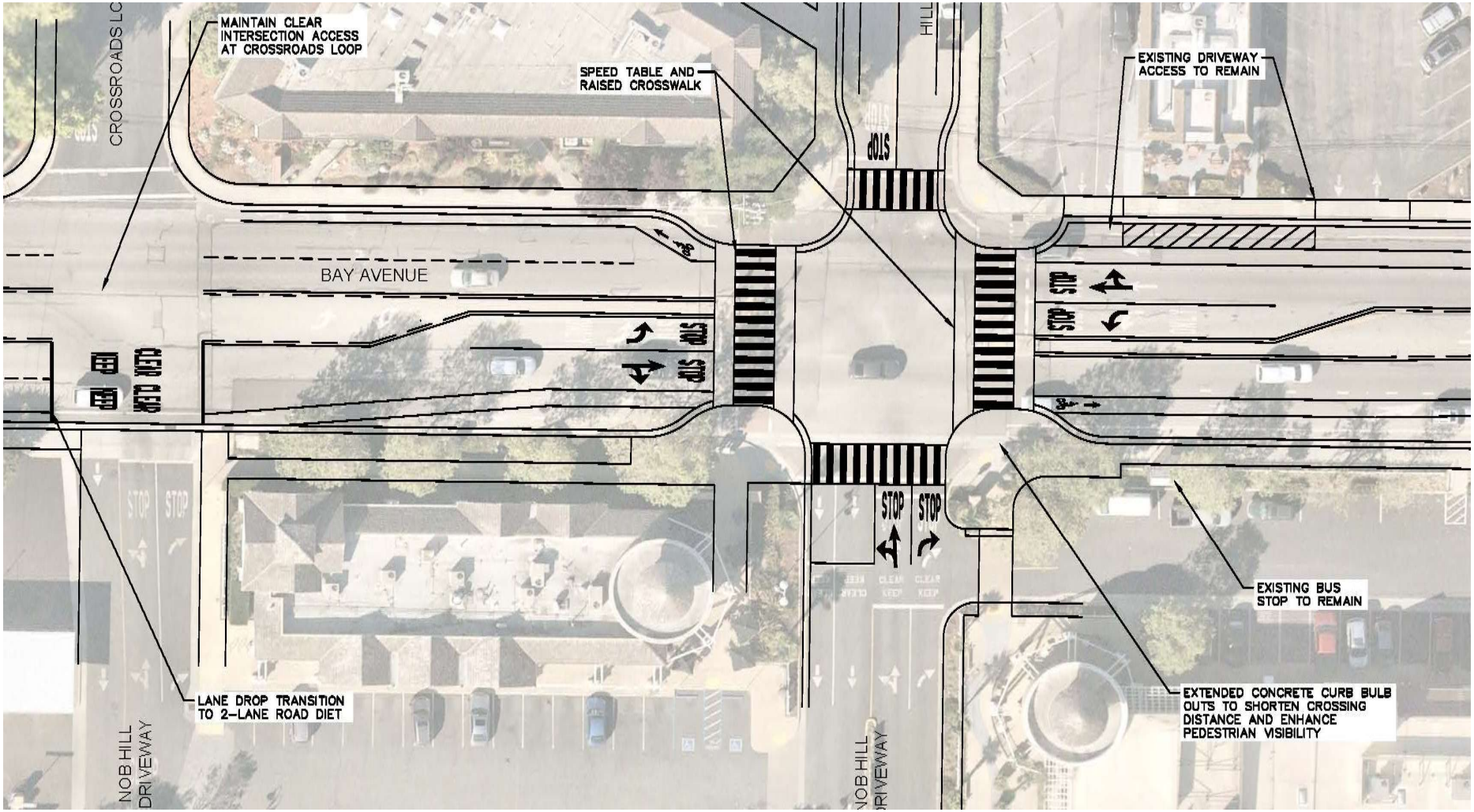
- Reduction in conflict points for vechiles and pedestrains
- Shortened crossing distances
- Improved LOS
- Reduced GHG emissions

Cons

- High initial capital cost
- Driver uncertainty

Bay Avenue and Hill Street Traffic Safety

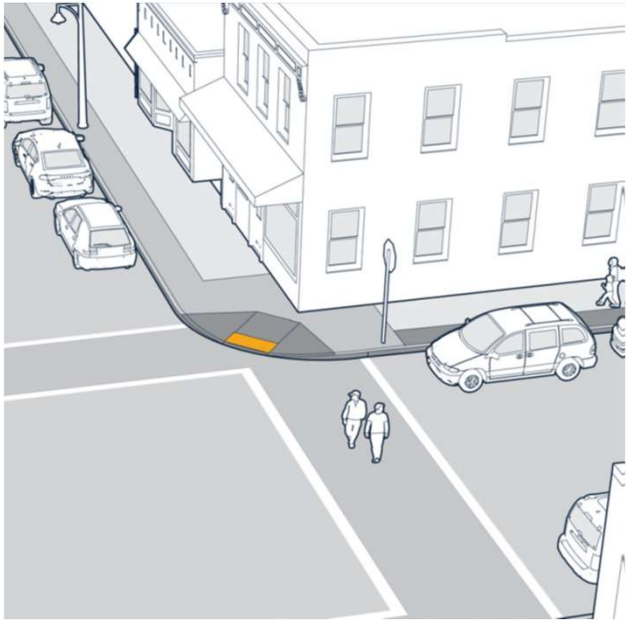
Road Diet



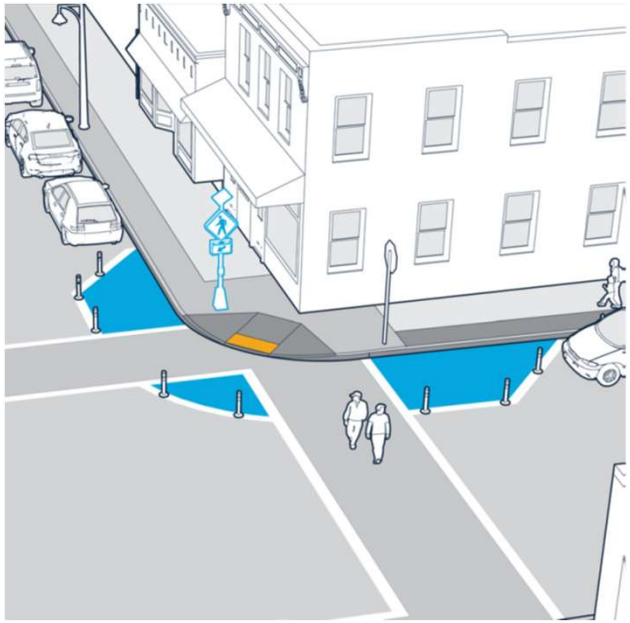
Bay Avenue and Hill Street Traffic Safety

Road Diet "Quick Build"

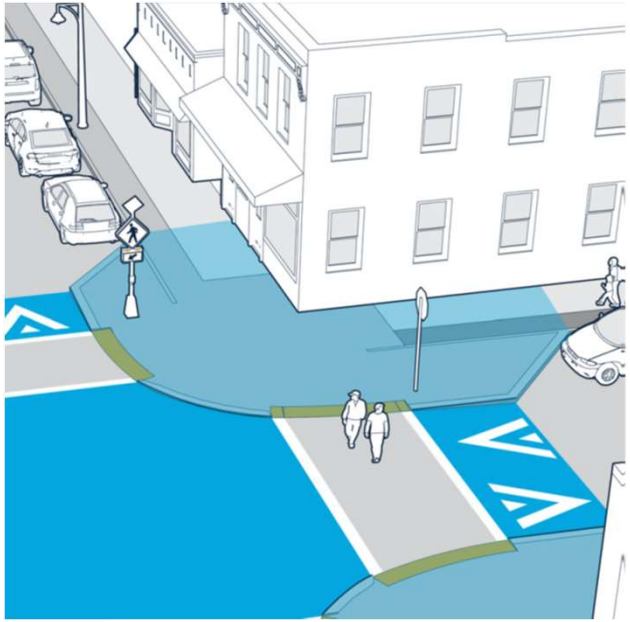
Existing condition



Interim curb extension (paint and delineators)

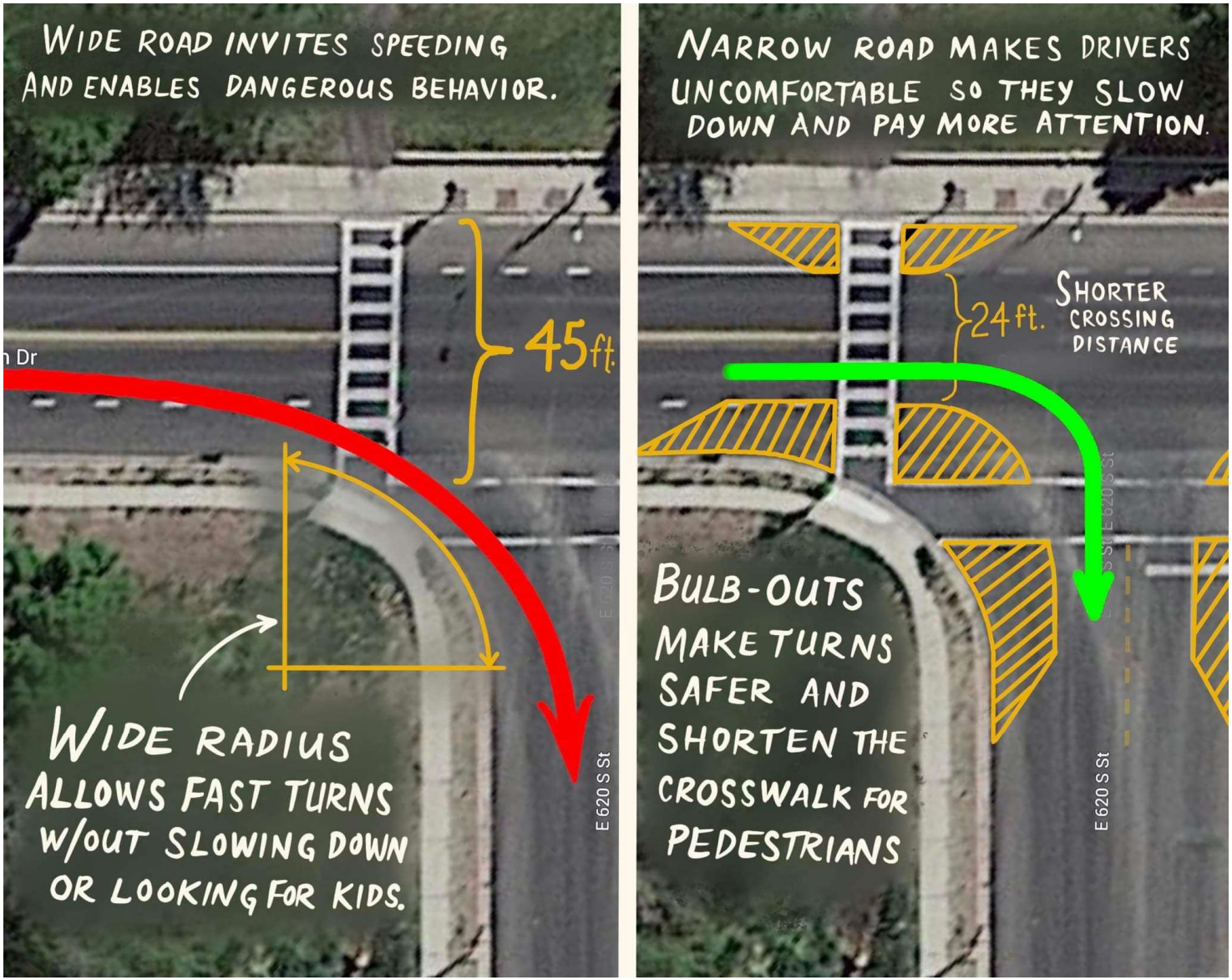


Permanent curb extension and raised intersection



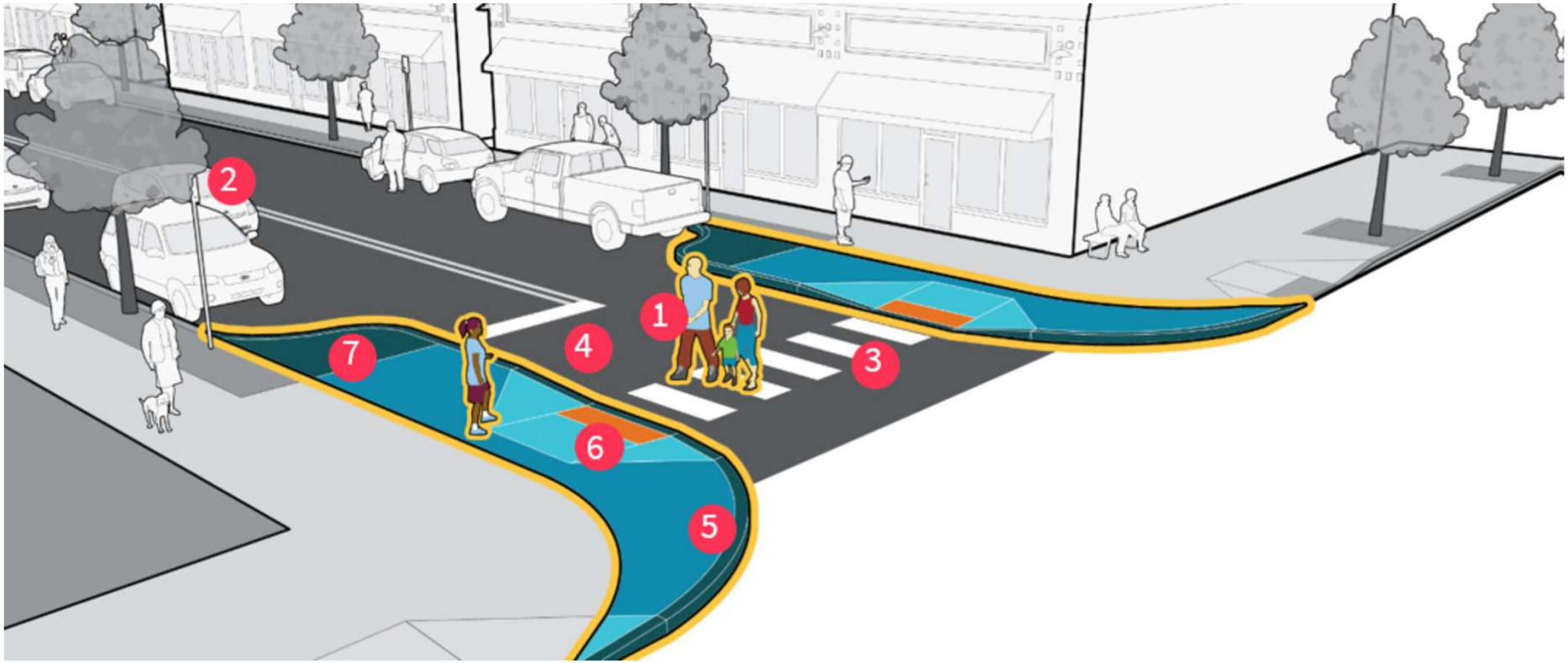
Bay Avenue and Hill Street Traffic Safety

Road Diet – Reduced Speeds



Bay Avenue and Hill Street Traffic Safety

Road Diet – Increased Visibility



Bay Avenue and Hill Street Traffic Safety Road Diet

Pros

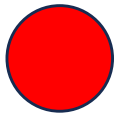
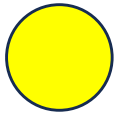
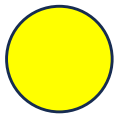
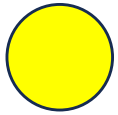
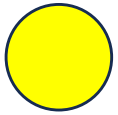
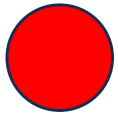
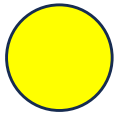
- Improved driver certainty
- Reduced vehicle speeds
- Increased pedestrian visibility
- Shortened crossing distances

Cons

- Decreased LOS
- Increased queueing

Bay Avenue and Hill Street Traffic Safety

Alternatives Summary

	Signal	Roundabout	Road Diet
LOS			
Queueing			
Collision Frequency			
Pedestrian Mobility			
Pedestrian Safety			
Construction Cost			
Aesthetics			
GHG emissions			

Bay Avenue and Hill Street Traffic Safety

Road Diet "Quick Build" Examples

Bay Avenue and Hill Street Traffic Safety

Road Diet "Quick Build" Examples

Bay Avenue and Hill Street Traffic Safety

Next Steps – Staff Recommendation

Short Term

- Winter 2023: Receive feedback from adjacent properties and complete public outreach
- Spring 2024 – Spring 2026: Road Diet "Quick Build"

Long Term

- 2024: Roundabout public education/outreach
- On-going: Pursue funding options
- Summer 2026: Construct Roundabout

Bay Avenue and Hill Street Traffic Safety

Additional Slides

Bay Avenue and Hill Street Traffic Safety

Next Steps - Alternatives

Short Term Options

- Road Diet "Quick Build"
- Pursue permanent alternative
- No Action

Long Term Options

- Permanant Road Diet based on outcome of "Quick Build"
- Roundabout public education, pursue funding options

Capitola City Council

Agenda Report

Meeting: September 28, 2023

From: City Manager Department

Subject: City Council Appointments to City Advisory Bodies

Recommended Action: Appoint members of the public to the City of Capitola Commission on the Environment.

Background: The Commission on the Environment advises the City Council on matters of an environmental concern. The Commission on the Environment (COE) was created in 2005 through the adoption of Resolution No. 3424 and is composed of the Mayor and 4 appointees (1 per Council Member). The COE also allows non-voting ex-officio members, such as students, to participate.

Discussion: Attached are the applications for appointment received on or before the printing of this agenda packet. The COE received one application for a youth member appointment. The COE met on September 20, 2023, and recommends the appointment of Tucker Graessle.

Fiscal Impact: None.

Attachments:

1. Advisory Group Applications

Report Prepared By: Julia Moss, City Clerk

Approved By: Jamie Goldstein, City Manager

CITY of CAPITOLA
BOARDS AND COMMISSIONS APPLICATION

Application for:

- ☐ Art & Cultural Commission
  - ☐ Artist
  - ☐ Arts Professional
  - ☐ At Large
- ☐ Finance Advisory Committee
  - ☐ Business Representative
  - ☐ At Large
- ☑ Commission on the Environment
- ☐ Historical Museum Board
- ☐ Planning Commission
- ☐ Check if applying as youth member for any board
- ☐ Other Committee _____

Name: Graessle (Last) Tucker (First)

Residential Neighborhood: Jewel Box Capitola

Occupation: Beach Lifegaurd

Describe your qualifications and interest in serving on this Board/Commission/Committee: I am extremely interested in serving on this commission because I am an avid community member, surfer, environmentalist, and fisherman. I am also actively involved in organizations like Youth for Environmental Action, and the surfrider foundation. With the commission role, I plan to further my community into a more environmentally healthy ecosystem.

(Use additional paper, if necessary)

Please Note: Appointment to this position may require you to file a conflict of interest disclosure statement with the City Clerk. This information is a public record and these statements are available to the public on request.

7/10
Date

Signature of Applicant

All information contained in this page of the application is public data and will be made available for public review and copying for anyone requesting it and may be posted on the website of the City of Capitola. All information in this page will be provided to the Capitola City Council in a public forum and will be reviewed in public. It will therefore be part of the public record.

BOARD & COMMISSION APPOINTMENTS

September 28, 2023

Background

- Administrative Policy I-38 allows youth participation on City advisory bodies
  - All terms are one year, coinciding with school year
  - Nonvoting, will not count toward quorum
- Commission on the Environment
  - No current Youth Members
  - 1 application was reviewed in accordance with Commission Bylaws

Applicants

- Commission on the Environment
  - Tucker Graessle
  - COE met on September 20, 2023, and recommends appointment of youth member, Tucker Graessle

Recommended Action

- Appoint Tucker Graessle as youth member to Commission on the Environment for one-year term